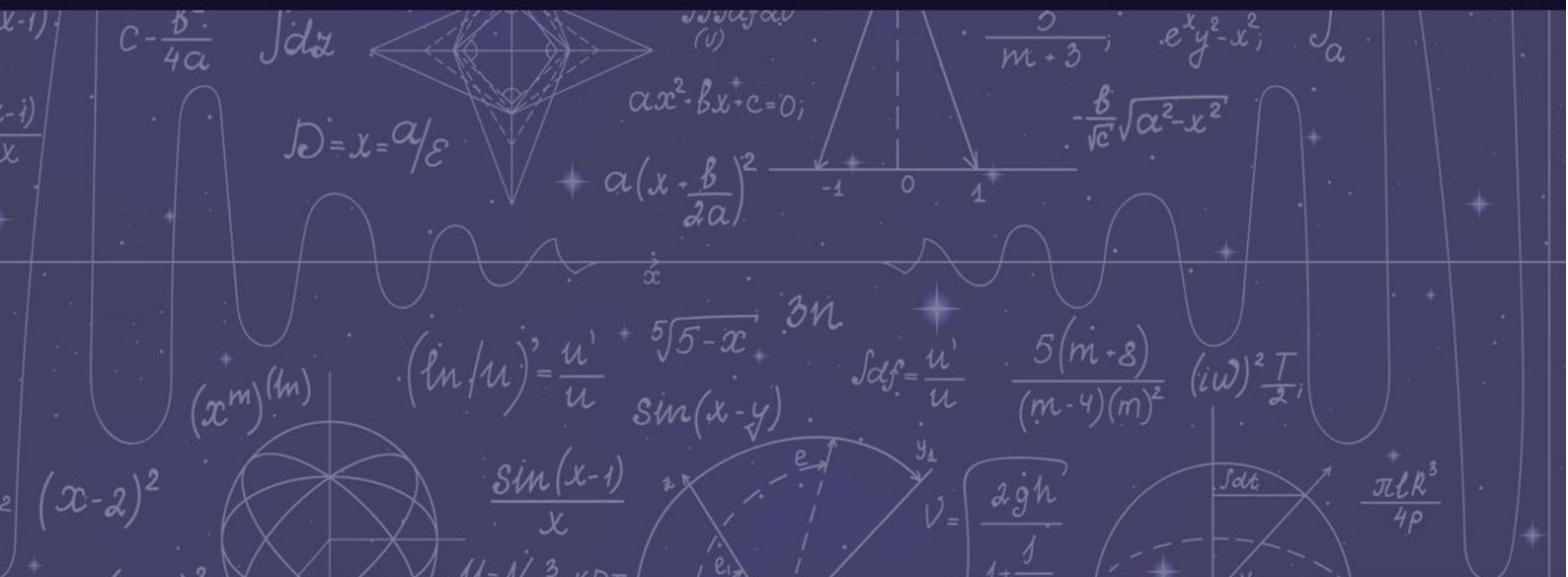


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THEORETICAL AND METHODOLOGICAL FOUNDATIONS OF THE DEVELOPMENT OF MERCHANDISING ACTIVITIES IN RETAIL ENTERPRISES

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Abstract. Today, increased competition in the "producer-consumer" network and competition between retailers forces market participants to focus on ensuring a competitive advantage for their stores. Merchandising (translated from English - the art of selling) is a marketing direction that helps to promote retail sales, drawing the attention of potential buyers to certain goods or groups of goods at the point of sale.

Keywords: merchandising, industrial diversification, marketing communications, summarizing, brand, packaging.

Today, increased competition in the "manufacturer-consumer" chain and competition among retailers are forcing market participants to focus on ensuring competitive advantage for their stores. In order for retail enterprises to be distinguished by their individuality and attract buyers, it is necessary not only to skillfully use all the traditional levers of influence on the buyer, but also to look for new ones. The success of leading retailers in the competition is due to the introduction of Merchandising Technologies.

At present, radical changes in the economy of Uzbekistan, industrial diversification, new approaches in the service sector, including in trade activities, necessitate the use of innovative technologies from retail enterprises operating in the market. Based on this, most retail enterprises operating in Uzbekistan are working using the merchandising technique, which is one of the innovative marketing technologies.

Merchandising (translation from English - the art of trade) is a marketing direction that helps to stimulate retail trade, attracting the attention of potential buyers to certain groups of goods or goods at the point of sale. Today, the task is to ensure that the product is buyer-proof, that the consumer has the necessary characteristics. After the creation of the brand of one brand, Muayan is determined by its optimal response to the "price-quality" criterion, packaging and methods of moving the product, and the release of the brand to the market is carried out. Along with the release of goods to the market, attention is paid to the methods and means of sale.

As we know, the consumer is an important and prime element of the market. In addition, the consumer is considered an important factor in the competitive environment. In subsequent years, psychologists have found out that the consumer in most cases buys goods, occurs not on the basis of the previously established landmark, but on the basis of a sudden, emergency emerging decision. That is, "came, saw, bought", in the form of which the implementation of the purchase was observed. Let's take an example from life: a person comes to the supermarket with the intention of buying the products he needs for his needs. He goes to the shelf he is looking for, checks it in a few seconds and draws his attention to a product that has attracted him more than others. In addition, he can explore other products on the shelf or continue to search for a specific product. However, in most cases, the consumer chooses the product that he sees first.

According to various studies, consumers who visit retail outlets forget their frequently purchased products after entering a trading enterprise and buy a product that is a substitute product for the product they are looking for “caught their eye”. Various experiments have shown that 80% of decisions related to the choice of a brand are made directly in the trading hall. This work in the system of Marketing Communications is called merchandising, that is, the promotion of brands in the retail network.

Merchandising is a marketing direction that stimulates retail sales by attracting the attention of Final customers to certain groups of goods or goods at points of sale without the active participation of Special employees, and the art of trade is a set of measures aimed at promoting a specific product, brand, packaging, produced directly at a point of sale, on a trading platform.

In recent years, merchandising has become more in demand due to the improvement, expansion and saturation of the market, as well as increased competition. Merchandising is always aimed at a specific result: to stimulate the desire of the final consumer to choose and purchase the advertised product. Its goal is to increase sales through retail chains and attract new customers. Various methods are used in merchandising, which often have a non-verbal effect on the purchase decision.

The concept, essence of merchandising: merchandising is a marketing direction that helps stimulate retail sales by attracting the attention of Final buyers to certain brands or groups of goods in places of sale without the active participation of Special employees. Most buyers rush and sometimes forget to make all the necessary purchases. Sellers cannot help all buyers choose the right product. Merchandising provides the product with ease for both the consumer and the seller. The correct placement of goods and promotional materials will remind the buyer about the company's products and affect the purchase decision. Merchandising—from English “retail art” is translated as retail Policy, Promotion and sale of certain goods in its own store. From the point of view of the profession, merchandising is a type of independent activity that is professionally carried out on the management of the behavior of buyers based on the analysis of the distribution of the cognitive resources of the individual. Merchandising is a set of measures to promote goods through final consumer points. Merchandising is one of the elements of the strategy for the development of the trading network and a reliable way to generate additional income for retail enterprises. Merchandising is an effective technology for managing calculations and placing products, which makes it possible to significantly increase sales of products in retail outlets. Merchandising is the “language of communication” between the store and the buyer.

The correct use of trading tools is to reduce the cost of informing consumers within the point of sale. A merchandising tool is understood as a means of influencing a merchandising object, while a set of tools is a set of tools and methods to achieve the goals of merchandising.

There are a number of approaches to the definition of Merchandising in general. Of particular importance are the approaches of Russian specialist scientists. Table 1.1 below lists the definitions given to merchandising.

Summarizing the approaches to the activity of merchandising above, we can note the main thing: merchandising is part of marketing, which is any activity aimed at ensuring effective promotion of goods at the retail level. The main requirements for the use of merchandising:

- the enterprise should always have a full range of goods;
- a special design is necessary: the organization of trading halls, including special cooling devices, racks, showcases, counters, etc;
- placement of equipment in the Hall, painting of walls, lighting;

within the enterprise, small retail outlets, as a rule, should be created with more expensive and exclusive goods;

the display of goods should be carried out in such a way as to "force" the consumer to walk through the trading halls of the enterprise for as long as possible, almost without resorting to the help of sellers.

Merchandising is one of the modern tools of marketing communications that use methods of psychological impact on the consumer;

Merchandising is an independent type of activity that is professionally carried out in customer behavior management, based on the analysis of the distribution of human cognitive resources.

Setting goals is the starting point for determining the scale and types of work (functions) that ensure their achievement. Functions of the same type, which are often repeated, can be represented as merchandising tasks.

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DRUGS THAT HELP WITH EPILEPSY AND THEIR MECHANISM OF ACTION

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Abstract. *Epilepsy is a common brain disorder in which the patient has recurrent seizures. A seizure or a seizure attack is a short-term change in normal brain activity, which is the main symptom of the disease. When two or more seizures occur, the patient is diagnosed with epilepsy. Some seizures may take the form of prolonged staring at one point. Other attacks cause a person to fall, shake, and not understand what is happening around them. Seizures can last from a few seconds to a few minutes. The disease is more common in children and the elderly, but can affect people of any age.*

Keywords: *epilepsy, origin, help in epilepsy, effect of drugs in epilepsy.*

Causes of disease

In about half of cases, the cause of the disease is unknown. In the second half, this situation is characterized by various factors, including:

Genetic influence. Some types of epilepsy, classified by seizure type, are hereditary. Certain genes can make a person more sensitive to environmental conditions that cause seizures.

Head injuries. Head injury from a car accident or other incident.

Brain anomalies. Brain disorders, including brain tumors or vascular malformations.

Stroke is the leading cause of epilepsy in adults over the age of 35.

Infections. Meningitis, HIV, viral encephalitis and some parasitic infections.

Injuries during pregnancy, infections in the mother, poor nutrition or lack of oxygen

Developmental disorder. Epilepsy sometimes goes hand in hand with developmental disorders such as autism.

Although the underlying causes of epilepsy are unknown, certain factors are known to trigger seizures in people with epilepsy. Avoiding these factors can help you live better with epilepsy:

- taking various medications;
- consumption of strong alcohol;
- use of cocaine, ecstasy or other illegal drugs;
- insomnia;
- other drugs that interfere with taking antiepileptic drugs;
- flashing lights, images and repeating patterns;
- exhaustion;
- nervous tension;
- climate change;

Epilepsy can develop at any age. The diagnosis is usually made in early childhood or after the age of 60. Epilepsy in young children is associated with lack of oxygen to the brain during pregnancy or during difficult labor. Sometimes, with age, the number of seizures decreases or disappears completely.

Manifestation of the disease

A seizure (seizure) is the main symptom of epilepsy. Symptoms vary depending on the type of seizure.

Seizures are of 2 types:

- spread out
- partial.

In diffuse seizures, all parts of the brain are affected and there are no focal symptoms. Disseminated attacks have the following forms:

- tonic-clonic seizures
- absences (absence of consciousness for short periods of time)
- mixed forms.

If seizures occur as a result of abnormal activity in only one area of the brain, they are called partial or focal seizures. In almost all cases, an aura is observed before an attack - a harbinger of epilepsy. A few hours before the onset of attacks, and sometimes a day or two earlier, the patient is sleepy, anxious, irritable, twitches appear in some parts of the face or body, and the corners of the lips begin to tremble. These symptoms are usually followed by major seizures. Partial (focal) attacks:

- simple
- complicated
- may be secondary spread.

Normal partial attacks do not cause unconsciousness and are divided into the following types:

motor focal attacks: the duration is not long, tonic or clonic, after the attack the muscles become weak;

sensory focal attacks: the characteristics of such attacks are hallucinations, twitching in some parts of the body;

vegetative focal attacks: observed when limbic structures are damaged, symptoms: - increased sweating, nausea, rapid heartbeat, "chicken skin" syndrome, emotional reactions.

Complex focal seizures affect people's consciousness and can lead to unconsciousness. Patients with complex focal seizures are usually not aware of what is happening around them during the seizure. They do not react to other people or the environment during the attack and cannot remember what happened. They may stare at the boss for a long time, appear dreamy, or suddenly wake up.

A large epileptic seizure or tonic-clinical seizure is the most characteristic manifestation of the disease. It is characterized by the following signs:

- loss of consciousness
- to shout
- involuntary muscle contractions
- frequent tremors
- cyanosis and drooling
- cessation of breathing
- biting the tongue
- involuntary urination and defecation

Such attacks usually last 1-3 minutes. After a seizure, the patient usually falls asleep or falls asleep, has muscle pain, and memory loss.

Depending on the location and cause of the epileptogenic focus, epilepsy has the following types:

temporal epilepsy (frequent loss of consciousness, without attacks, without vegetative manifestations, there is an aura, in 75% of cases it shoots only with an aura, EEG EEG changes are not observed);

forehead epilepsy (seizures, loss of consciousness, aura, without aura, sudden, lasting less than a minute, always the same);

parietal epilepsy (a rare condition, pain, paresthesias, changes in temperature sensitivity, disorders of the body scheme, etc.).

epilepsy of the nape of the neck (rare, hallucinations, limitation of the field of vision, blinking of eyelashes and various sensations in the area of the eyeball, dizziness).

Dangerous aspects

Severe widespread attacks are the most dangerous. Loss of consciousness, respiratory arrest, throat infection or bleeding can lead to death. If the attack continues, the heart and blood vessels will be burdened, the patient may die or fall into a coma due to lack of oxygen to the brain. Often, life-threatening seizures occur when anticonvulsant drugs are discontinued.

Epilepsy and pregnancy

Although most women with seizures give birth to healthy babies, a new mother may need special care during pregnancy. Seizures during pregnancy can cause:

termination of pregnancy due to lack of oxygen to the fetus

fetal heart rate slowing

miscarriage due to premature separation of the partner from the uterus or loss of consciousness

premature birth

The condition is sometimes passed down from generation to generation, but don't panic, most children do not inherit epilepsy from their parents. Among the general population, the risk of developing the disease at a certain period of a child's life is about 1%. If the mother has seizures, the child's risk of developing the disease increases, and the father's seizures have no effect on this indicator.

Treatment of epilepsy during pregnancy depends on the characteristics of the disease. Neurologists usually recommend continuing to take anticonvulsants during pregnancy. However, it all depends on the type of drug. It may be necessary to change the dose or switch to a new medicine, but it is not necessary to stop taking the medicine altogether. Some anticonvulsants are not recommended for pregnant women because they can cause problems with fetal development or birth defects.

Most pregnant women with epilepsy have uncomplicated babies. Epileptic women, like other pregnant women, can use pain relief methods during labor and delivery. Seizures during childbirth are rare. If a seizure occurs during labor, it can be stopped by intravenous medication. If the seizure lasts for a long time, the doctor may help the baby to be delivered by caesarean section.

Breastfeeding is recommended for most women with epilepsy, even those taking anticonvulsants. If the child develops insomnia, signs of chronic intoxication, the child can be transferred to artificial feeding or the mother's anticonvulsant drugs can be gradually canceled.

Prevention

Here are some tips to help reduce the risk of epileptic seizures:

Get enough sleep every night - set a regular sleep schedule and stick to it.

Learn stress management and relaxation techniques.

Avoid drugs and alcohol.

Take all medications as prescribed by your doctor.

Avoid bright flashing lights and other eye strain. It is forbidden to work with constantly moving devices, in high places, near fire, in places with a high risk of fatigue, for example, in shift work.

Follow a ketogenic diet: eat high-fat foods, limit salty foods, fluids, because water retention in the body leads to brain swelling and causes seizures.

Engage in light physical activity. For example, walking. It is necessary to prevent bleeding to the head during exercise

If you have been diagnosed with epilepsy, you are prohibited from driving.

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MORPHOLOGICAL CHANGES OF BONES IN HYPOPARATHYROIDISM

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Abstract. *Morphological changes in the bone structure, namely the structure of tubular bones against the background of diseases of the parathyroid gland, are insufficiently covered in the literature. Meanwhile, the solution to these issues would contribute to a more in-depth clarification of the place and significance of the hypo parathyroid state of the maternal organism during pregnancy in the pathogenesis of limb deformities from the system into the flesh to generalized forms and would serve as a basis for the development of new pathogenetic prevention and treatment. The purpose of this study was to evaluate changes in the morphological structure of tubular bones of experimental animals with hypoparathyroidism.*

Keywords: *hypoparathyroidism, diseases, organism, morphological changes, structure.*

Relevance. There are quite a lot of various diseases of the musculoskeletal system in children, most often there are deformities of the limbs. The reason for the observed deformities of the development of the bone skeleton during fetal life is due to heredity, infectious diseases of the mother during pregnancy, endocrine pathologies, and toxicosis (especially the first half of pregnancy). Many authors, studying the endocrine status of patients with limb deformities, came to the conclusion that this pathology is hormonal and mainly develops in the late period of the child's intrauterine life.

It has been established that there is a relationship between the function of the parathyroid gland in the mother and the frequency of various forms of orthopedic deformities of the limbs in newborns. A decrease in trace elements in pregnant women caused an increase in the incidence of congenital orthopedic diseases in newborns. Disorders of connective tissue development that occur with hypofunction of the parathyroid gland can also cause skeletal deformities.

Morphological changes in the bone structure, namely the structure of tubular bones against the background of diseases of the parathyroid gland, are insufficiently covered in the literature. Meanwhile, the solution to these issues would contribute to a more in-depth clarification of the place and significance of the hypo parathyroid state of the maternal organism during pregnancy in the pathogenesis of limb deformities from the system into the flesh to generalized forms and would serve as a basis for the development of new pathogenetic prevention and treatment.

The purpose of this study was to evaluate changes in the morphological structure of tubular bones of experimental animals with hypoparathyroidism.

Material and methods.

The experiments were carried out on 28 mature white rats, which were divided into two groups: control (n=12) and experimental (n=16). A group of experimental animals performed coagulation of the 1st lobe of the parathyroid gland and revealed hypoparathyroidism. At the end

of the experiment, the rats were decapitated under light ether anesthesia, tubular bones were extracted and the histological picture of the diaphysis and epiphyses was studied. Bone pieces were fixed in 10% neutral formalin, decalcified for 3 weeks in 7% nitric acid solution with a change of solvent every week.

Thoroughly washed in running water for two days and then passed through alcohols of increasing strength, ethanol-chloroform, paraffin-chloroform, two portions of paraffin, and poured into paraffin. Sections 5-6 microns thick were made and stained with hematoxylin and eosin, picrofuxin, and histochemical staining methods were used: toluidine blue for glycosaminoglycans, CHIC reaction. The study of tissue sections was carried out under a microscope MS-300 (Austria), and microphotography was carried out using a Nikon Cool Pix 4500 camera

Results and discussion.

In animals of the control group, the diaphysis is formed by bone tissue with solid architectonics. The compact (cortical) substance is externally covered with a periosteum consisting of outer and inner layers. The outer layer is formed by dense fibrous tissue, the fibers are oriented parallel to the bone surface. The inner layer is formed by loose fibrous tissue. Fibroblasts and osteoblasts, as well as blood capillaries, are found among the thin collagen fibers. The outer common plate is located under the periosteum, the inner common plate is also deeper defined. On the side of the bone marrow, there is an endost containing osteoblastic cells. The bulk of the compact substance of the diaphysis is made up of osteons, which have the form of cylinders and are located along the long axis of the bone. Insertion (interstitial) plates are located in the spaces between the osteons. Between the bone plates, there are lacunae with osteocytes, the processes of which extend into the bone tubules. Small blood vessels are located in the tubules of the osteons, and perforating channels are also found that provide blood supply from the periosteum.

The trabeculae of the spongy substance of the bone are formed by parallel bone plates combined into packages. There are lacunae with osteocyte bodies with pronounced processes between the bone plates of the spongy substance. Thicker trabeculae located around blood vessels have a similar structure to osteones. Inactive and active osteoblasts are distinguished in bone arches and arches. In the zone of transition of the epiphysis to the diaphysis, the epiphyseal cartilaginous growth plate is determined - hyaline cartilaginous tissue with chondroblasts arranged in the form of cartilaginous columns with signs of calcification of the structure of both the periosteum and the common plates and the osteoid system. Osteones and inset plates are also colored unevenly, there is a tortuosity of the bone plates. Uneven staining and tortuosity of bone plates indicate a violation of the metabolic homeostasis of compact bone, characteristic of the phenomena of destruction and demineralization. In some areas of the common bone plate of the diaphysis, cracks filled with a translucent liquid are revealed. Osteocytes located in bone lacunae are poorly colored and are more characterized by oxyphilicity. Bone lacunae are somewhat larger than osteocytes, and bone plates do not have a clear distinction.

In the spongy substance of the epiphysis of the tubular bone, the anastomosing bone trabeculae differ in a variety of thicknesses and stainability, mainly inactive osteoblasts. There is pronounced branching of bone trabeculae with detachment of the red bone marrow from bone structures. In trabeculae, basophilic wavelike lines are determined, resulting from the processes of demineralization and violation of mineralization of the intercellular substance of bone tissue.

Thus, when hypoparathyroidism is detected in tubular bones, changes in the histological structure of both the diaphysis and meta epiphysis are revealed, characterizing the development of destructive degenerative processes with impaired mineralization of the intercellular matrix.

Based on the results of morphological research methods, the dynamics of the formation of tubular bones are revealed and the regularities of ossification of bone tissue against the background of hypoparathyroidism are established. As a result of the study, the difference from the normal histological picture of hypo parathyroid individuals in the growth zones was shown, namely the basal layer of chondrocytes vacuolized. In places, the appearance of young osteoblasts is determined, they are located according to the type of differently directed architectonics. As a result of a detailed analysis of morphological changes, the dynamics of development in limb deformity against the background of reduced parathyroid function have been prepared. Taking into account the significant influence of mineral metabolism, weight, age, and composition of the diet on the condition of animals, identical conditions were observed during the experiments.

The development of destructive phenomena is most likely associated with the effect of hypoparathyroidism on the state of bone tissue and ultimately leads to a decrease in the metabolism of a number of minerals. Determination of the content of certain elements in the bone tissue of experimental animals, carried out by biochemical blood analysis, showed a significant shift in trace elements, which leads to the destruction of bone tissue, contributing to the development of osteopenia and a decrease in bone strength. Toxic metals can be embedded in the composition of hydroxyapatite crystals, displacing calcium, and also causing metabolic disorders in bone tissue and dysregulation of remodeling processes.

The obtained results of the histological structure of bone tissue reflect a decrease in its strength, observed with a decrease in bone mineral density under the influence of hypothyroidism.

Conclusions.

Our studies show that PTH is necessary for the normal formation of the enchondral bone, mainly additionally regulating individual areas of the growth plate. PTH is produced only in the parathyroid glands, and its synthesis and secretion are regulated by calcium. Thus, the reduced resorption of differentiated chondrocytes is the most likely cause of the slightly enlarged hypertrophic zone observed in rats. PTH indicates an increase in the hypertrophic zone, which leads to a slight increase in the overall size of the growth plate. Therefore, PTH is important for normal cartilage remodeling. In addition, a decrease in osteoblast production in the absence of PTH led to poorly developed primary spongiosis and, ultimately, to a decrease in the volume of spongy bone. However, this reduction led to a decrease in the length of the bone tissue as such, although the total length of the tibia was almost normal. In the tubular growth zone, the ability to maintain normal calcium transport is reduced and, consequently, they develop hypocalcemia. Consequently, the predominant effect on osteoblasts in primary spongioses at this stage of development seems to be associated with PTH.

The hypo-parathyroid state in experimental animals leads to the development of structural changes in the histology of tubular bones. Signs of destructive degenerative processes associated with a violation of the state of the intercellular matrix appear in the diaphysis and meta epiphyses of bones, which undoubtedly leads to a decrease in bone strength.

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IMPROVEMENT OF EARLY DIAGNOSIS AND PREVENTION MEASURES OF KIDNEY STONE DISEASES AMONG THE POPULATION

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Abstract. *Kidney stone disease is a disorder that affects millions of people worldwide. Early diagnosis and prevention is essential to reduce the morbidity associated with this condition. This article examines current research into early diagnosis and preventive measures of kidney stone diseases and their potential for reducing the prevalence and related complications. It looks at the existing diagnostic tests suitable for early detection, as well as potential preventive strategies, such as lifestyle modifications, medication, dietary supplements, and urologic procedures. Additionally, the article assesses the impact of current approaches to prevention, early diagnosis and treatment of kidney stone diseases on public health. Finally, it evaluates the potential for improved outcomes through greater public awareness and education about kidney stone diseases and their management. The article provides an informative overview for healthcare professionals and those wanting to better understand the importance of early diagnosis and preventive measures for kidney stone diseases.*

Keywords: *kidney stone disease, early diagnosis, preventive measures, population, risk factors, natural remedies, complications, treatment options, diet modification, exercise.*

INTRODUCTION

Kidney stone diseases are a common medical condition among the population of all ages and ethnicities, characterized by the presence of calcium deposits or small stones in the kidneys. Over the past decade, the prevalence of kidney stone diseases has increased exponentially due to increased stress levels, poor diet, lack of physical activity and rising obesity. As the population's lifestyle continues to evolve, the risk of developing kidney stones increases. Early diagnosis and preventive measures are thus essential in managing and preventing the onset of kidney stone diseases.

Early diagnosis of kidney stone diseases is critical for timely treatment, as it allows for early diagnosis of the condition and more effective prevention measures. Reliable and cost-effective diagnostic methods include urinary tract imaging to detect the presence of stones, and biochemical assays to identify the causative agents, such as bacteria and systemic disorders [1]. Additionally, obtaining a detailed medical history can help to identify any risk factors that can help diagnosis of kidney stone diseases.

Preventive measures for kidney stones include a combination of lifestyle changes and dietary modifications. The most effective preventive strategies include increasing physical

activity, emphasizing a nutrient-dense balanced diet, avoiding sugary and acidic drinks, and limiting the intake of salt. Additionally, including dietary sources of calcium and magnesium, such as dairy products and fortified orange juice, can help reduce the risk of stone formation. Additionally, medications and supplements can help to reduce symptoms, and the use of dissolve-able agents like potassium citrate may help prevent recurrence of stones.

It is important for people to understand that early detection and preventive measures are the key to managing and preventing kidney stone diseases. A combination of diet and lifestyle modifications, such as increasing physical activity and limiting sugar and sodium intake, and monitoring by experienced healthcare professionals is essential for early diagnosis and maintaining kidney health [2]. Additionally, proper diagnosis and treatment are important for managing and controlling the disease, thus preventing stone recurrence.

METHODS

Early diagnosis and preventive measures of kidney stone diseases among the population

Kidney stone diseases (KSDs) are one of the most common urologic problems that affect people in various countries. The incidence of KSDs is increasing, largely due to change in dietary habits and lifestyle. Early diagnosis and preventive measures are the most important strategies to reduce the prevalence of KSDs and the associated burden. This article reviews the available knowledge on early diagnosis and preventive measures of kidney stone diseases among the population.

Early diagnosis of kidney stone diseases is essential to avoiding complications, allowing for more timely and effective treatment. Ultrasound, computed tomography (CT), and magnetic resonance imaging (MRI) are commonly used diagnostic tools for KSDs [4]. Metabolic profiling based on urinary studies is also useful in making an accurate diagnosis. A 24-hour urine collection taken over two days is recommended to assess the risk of stone formation, according to the American Urological Association (AUA) guidelines [3,7].

Once a diagnosis is made, it's important to take preventive measures to reduce the chance of future stone formation. Strategies for preventing KSDs include adhering to a healthy diet, avoiding or reducing the intake of diuretics, reducing salt intake, and increasing water intake. It's also important to maintain normal body weight to reduce the risk of forming stones [5,6]. Additionally, advancing age, increased urinary oxalate, hyperparathyroidism, excess dietary calcium, and certain medications can also increase the risk of stone formation and should be managed appropriately.

Although lifestyle and dietary changes alone may not always reduce the risk of future stone formation, patients with KSDs should be counseled on preventive measures that may reduce the risk of stone recurrence. Urologists should monitor patients with a history of KSDs on an ongoing basis to ensure that preventive measures are being followed.

RESULTS AND DISCUSSION

The present study aimed to assess the prevalence and association of kidney stone diseases among a population in a rural area in Sri Lanka. The results revealed that the prevalence of kidney stone diseases is significantly higher in the studied population (11.2%) as compared to the published prevalence rates in other parts of the world (4-9%) [8, 9]. The increased prevalence of kidney stone diseases observed in this population is of great concern and preventive measures should be taken immediately to bring down the number of cases in this region.

The majority of the cases (94.2%) were males and they were found to be more prone to kidney stone diseases than females. This finding is in accordance with previous literature which suggest a higher risk in males affected by kidney stone diseases [10]. Additionally, majority of the cases were observed in the age group of 25- 44 years, indicating that age is an important risk factor in developing the disease. Other studies have also identified age as a major risk factor for kidney stone formation [11].

The present study showed that the significant risk factors associated with kidney stone diseases were hypertension (66%) and diabetes mellitus (60%). This finding is in accordance with other research as hypertension and diabetes are two major risk factors for kidney stone disease [8, 12]. Moreover, the odd ratios revealed that hypertension (OR=2.18; 95% CI 0.67-7.09, p=0.21) and diabetes mellitus (OR=4.7; 95% CI 1.28-17.41, p=0.02) increases the risk of kidney stone formation by approximately 2.18 and 4.7 times respectively as compared to the normal population without hypertension or diabetes.

The study also revealed that majority of the participants had burn habits such as smoking (68.2%) and consuming alcohol (73.2%), and the consumption of tea (91%) was significantly high. Such poor lifestyle habits can contribute to the formation of kidney stones, and preventive measures should be taken with the help of healthcare workers to stop the consumption of unhealthy foods and beverages [8].

Finally, the present study concluded that preventive measures should be implemented to reduce the prevalence of kidney stone diseases. Early diagnosis is important and screening of risk factors should be carried out regularly in order to identify the individuals who are at risk of developing the disease [13]. Additionally, regular health checkups, healthy lifestyle practices and nutrition counseling should be conducted to help reduce the risk of developing the disease among at risk individuals.

CONCLUSION

Kidney stone diseases are one of the most common types of chronic diseases, affecting a wide range of individuals around the world, including both male and female, as well as all age groups. Immediate diagnosis and early preventive measures are essential in minimizing the severe symptoms and long-term health effects associated with these diseases. Early diagnosis and preventive measures outlined in this paper are applicable to individuals of all ages and sexes, and can help to significantly reduce the risk of developing kidney stone diseases and their associated complications.

Education and awareness regarding kidney stone diseases are vitally important in order to ensure early diagnosis and effective management of these diseases. Since majority of kidney stone diseases are preventable by simple lifestyle changes or preventive medications, it is imperative to make individuals aware of them and the associated risk factors.

Early diagnosis and preventive measures are the key to reducing KSDs in the general population. Diagnostic tools like ultrasound, CT, and MRI scans should be used to make an accurate diagnosis, followed by lifestyle and dietary changes to reduce the risk of stone recurrence. Urologists should regularly monitor patients with a history of KSDs to ensure that preventive measures are being practiced.

Moreover, diagnostic tests, such as imaging tests and blood tests, must be carried out on an individual basis to help determine a person's risk of specifically contracting kidney stone diseases.

This will enable physicians to tailor preventive measures and treatments suited to the individual's lifestyle and medical profile.

In conclusion, it is clear that early diagnosis and preventive measures are essential in minimizing the severity of kidney stone diseases. The development and implementation of educational programs and efforts aimed to raise awareness among the general population is also essential. Individuals should also take the time to understand their own risk factors and ensure that they are receiving timely and accurate diagnoses, as well as appropriate treatments and lifestyle modifications as recommended by their physician. Therefore, early diagnosis and preventive measures should be taken into account for all types of kidney stone diseases to ensure a healthy life.

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MODEL FOR TEACHING CHILDREN WITH AUTISM SPECTRUM DISORDER

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Abstract. *This article is devoted to the analysis of scientific work, which describes a five-step model of training and the development of social skills in children with autism spectrum disorders, using a very popular method of video modeling.*

Keywords: *children with disorders, technologies, video modeling, development of social skills, assessment of social interaction.*

Today, there are a large number of children with autism spectrum disorders with insufficient development of social skills. In our country, the attention of specialists to the problem of autism has been drawn since the late 60s. Initially, the study was carried out by child psychiatrists (Ivanov E. S., Demyanchuk L. N., Demyanchuk R. V., A. E. Zelenetskaya, D. N. Isaev, O. P. Yuryeva, V. M. Bashina, V. E. Kagan, K. S. Lebedinskaya) [1]. They considered autism within the framework of childhood schizophrenia or schizoid (autistic) psychopathy (T. P. Simson, G. E. Sukhareva, M. O. Gurevich) [6]. One of the scientists who has been working on this problem for more than one or two years is Scott Bellini, who wrote an article in which he describes a five - step model of communication training, while all attention is paid to the help method, which has become very popular and relatively new, but is already actively used in practice – video modeling. One of the main features of autism in both children and adults is a disorder of social functioning, which leads to a number of problems, such as failure in school, rejection from peers and failures in communicating with people, depression, anxiety and other negative consequences. Many children with autism are willing and eager to communicate, but unfortunately they often lack the social skills to communicate successfully. When children with autism describe their anxiety, it is similar to performing on stage: trembling, rapid heartbeat, trouble concentrating). Moreover, the excitement is caused in the child not only by performing in front of an audience, but even the very thought of performing is already stressful. Many of us try to avoid such situations-this is a typical way to protect ourselves from stress. A for children with autism spectrum disorders it is also typical to avoid any social situations due to a lack of social skills, so the child does not have the opportunity to acquire them. In his article, Scott Bellini describes a five-step model of communication training, which looks like this [4]: 1. Assessment of social interaction. 2. Distinguishing between lack of skill acquisition and lack of application. 3. Choosing an intervention strategy. 4. Performing the intervention. 5. Evaluate and track progress. Children with autism spectrum disorders are more likely to communicate with adults than with their peers, as adults simplify this task for children – they do all the "work" on communication for the child [4]. The lack of skill acquisition/lack of skill use model helps us choose intervention strategies that are appropriate for the current lack. This is the advantage of this stage. The most important thing is that the strategies used correspond to the child's personal needs, and there is a logical explanation

for the method used. It is very important to constantly encourage your child for every little effort and participation in the training program. When choosing a correction method, it is necessary to take into account the principle: change the environment or behavior of the child. For example, teaching peer helpers to interact with the child during the day at school, training about autism for classmates, including the child in various leisure groups (sports teams, scout groups) [2]. On the other hand, if you do not change the environment, but work on the child's behavior, then organize such training for him that will allow him to be successful in communication. The main thing is not to focus on one thing, otherwise you can fail. It is necessary to make efforts both in changing the child's environment and in working on his behavior, this will ensure self-confidence and the acquired skill will be met with understanding by peers [5]. To date, there is a whole list of methods of teaching children social skills that have proven effective in teaching children with autism. For example, engaging peers as helpers who interact with a child with ASD throughout the day. They must have social and play skills, attend school regularly, and have early experience with children with autism. They are instructed about autism behaviors in a polite and age-appropriate way. This method helps to generalize new skills in the natural environment. Another good example of learning social skills is the role-playing/behavioral rehearsal method. It involves replaying various situations or activities in order to put into practice the acquired skills or those that the child had difficulty applying. Role-playing games can be scripted or spontaneous. In the course of training, the speed of performing actions and self-confidence will increase [3]. And finally, one of the most effective methods of teaching social skills – video modeling. Adults, peers, and the child can participate in it. Video modeling is viewing a demonstration of some behavior on video and then repeating the behavior of the model. The advantage of video modeling is that it becomes a visual confirmation of the child's own success! Scott Bellini conducted an analysis of video modeling studies, including 20 works by his colleagues, in which 63 children with autism participated. The results confirm that video modeling is an effective intervention method for social-and communication skills in children and adolescents with autism. These techniques persist over time and carry over to other people and situations. Studies have shown a dramatic increase in behavior during the average duration of the intervention (viewing 9 videos lasting three minutes) [5]. Thus, an analysis of the psychological and pedagogical literature on the problem of insufficient development of social skills in children with autism spectrum disorders has shown that the use of video modeling technology contributes to: teaching children with ASD a wide range of social skills, from the simplest to professional (showing initiative and addressing others); reducing unwanted (interfering) behavior of the child; consolidating the simulated behavior of the child adult-guided behaviors; students with autism can act more independently and best match their typically developing peers.

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AGRICULTURAL ECONOMY

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Abstract. *The article provides information about agricultural economics and management, how to manage it, and the development of agricultural economics and its in-depth study. Bringing them to the level of demand theoretically and practically is not only for agricultural economics, but also for other economics is also important for species.*

Keywords: *economy, structure, reform, network, resource, investment, income, profit, solution, task.*

The agricultural sector is very important in the economy of our country. Because half of the population of our republic lives in rural areas, and the well-being of the people is inextricably linked with the development of this sector. In addition, the agricultural sector plays a significant role in the gross domestic product and foreign exchange earnings of our country. The agricultural sector is important in providing the population with food products and raw materials for some industries. Now, the growth of the population and needs, as well as the growth of the processing industry, objectively require the further increase in the production of agricultural products. That is why it is necessary to develop and improve the effectiveness of this network.

Our first President Islam Karimov noted that the achievements in the agricultural sector are extremely important for the economic development of our country, "Today our society has realized that improving our lives, raising the standard of living of the population, increasing the efficiency of our economy, feeding our people, planning our future, in short, what kind of problem, what kind of issue do we see? "Let's face it, most of our wealth is primarily related to agriculture. The sector that feeds us all is agriculture".

In order to develop agriculture at the level of the requirements of the laws of the market economy, deepening, improving, and investing in the theoretical and methodological foundations of various forms of ownership that have the opportunity to operate freely in the network, the types of entrepreneurship based on them, and the free market relations between them. attract and introduce scientific and technical achievements, new techniques and advanced technologies into production, clearly define the ways of full and effective use of limited land and water resources, capital and labor resources in the short and long term, save at all costs, increase labor productivity It is appropriate to determine ways to increase the amount of profit on the basis of promotion, improvement of the employee-employee incentive system. It is necessary to take into account the specific features of agriculture when creating, developing, and introducing the scientific and practical foundations of these issues into production. It is necessary to take into account the laws of the free market economy, the nature, causes and consequences of all relations, the specific characteristics of the agricultural sector in the study of "Agricultural Economy". The agricultural network has the following specific features:

a) the influence of the natural factor is strong in agriculture. Temperature, precipitation, wind and other natural factors affect the production process in the network;

b) land is the main means of production in agriculture. Compared to other branches, feed is very important in agricultural production, because the production process in this branch is carried out directly on the ground. A seed is sown on the ground and a crop is grown on the ground. There are specific characteristics of land use, the denial or insufficient attention to which will lead to negative consequences;

d) agricultural production is carried out on very large areas. This, in turn, creates a certain demand in the organization of production;

e) production in the agricultural sector is seasonal. Crops and livestock require the passage of the entire vegetation period in the production of crops. This situation leads to a significant increase in the difference between the duration of expenses and income from activities in the network. For example, in cotton production, the production process begins in early spring and ends in autumn. In addition, the seasonality of production requires the organization of effective use of available resources in the network throughout the year. It is necessary to develop other forms of entrepreneurship in the network in order to provide employment to labor resources in the winter months;

f) living organisms also participate as labor tools in the production process. Specialists working in the field of agriculture must know the biological and zoological characteristics of plants and animals, and take them into account in the production process. The effectiveness of labor spent in agriculture largely depends on the biological capabilities of plants and livestock;

g) a part of the agricultural produce is used in the network itself for seed, fodder, food and other purposes. requires painting. During the rest of the year, this capacity is relatively empty.

In summary we can say that the agricultural sector is important in the economy of Uzbekistan. It supplies the population with food products, and the processing industry with raw materials. In order to improve the country's economy in the future, the development of agriculture is an objective necessity. As a result of agrarian-economic reforms implemented in agriculture, forms of collective, private and mixed ownership are gradually established and continuously developed. Farmers and peasant farms and other forms of entrepreneurship are being organized and developed on the basis of private ownership. In agriculture, special attention is being paid to the introduction of forms of economic management that ensure the material interests of farmers and awaken in them a sense of real ownership. property and the form of economic management based on it have also been preserved. In the future, it is desirable to increase the attention to the development of enterprises based on private and joint ownership.

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CARDIOVASCULAR DISEASES ORIGIN AND METHODS OF TREATMENT

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Abstract. *Diseases of the cardiovascular system - diseases of the heart, arteries and veins. They are many and varied. Some of these diseases (rheumatism, myocarditis, etc.) damage the heart, some arteries (atherosclerosis) or veins (for example, thrombophlebitis), others damage the entire cardiovascular system (hypertension).*

Keywords: *heart, aorta, stenosis, heart diseases, diagnosis and treatment.*

Diseases of the cardiovascular system remain the main cause of disability and death worldwide. According to the World Health Organization, 56% of all deaths are caused by diseases of the cardiovascular system. In European countries, cardiovascular diseases cause the death of 4.3 million (48%) people per year.

According to the State Statistics Committee, 62.1 percent of citizens who died in the Republic of Uzbekistan in January-June 2019 were caused by diseases of the circulatory system.

Diseases of the cardiovascular system are closely related to a person's lifestyle and existing risk factors. While most risk factors can be controlled by lifestyle changes, some (hypertension, dyslipidemia, and diabetes) can be corrected with medication.

Professor Lee Sang-chul from the multidisciplinary Seoul Samsung Medical Center clinic in South Korea recently visited Tashkent for patients with cardiovascular diseases and those who want to undergo preventive measures against these diseases. participated in the event.

In the program, the professor gave information about types of heart diseases, dangerous conditions and signs in the blood system, as well as advice on preventing the listed problems.

Video Player

Notable professor Lee also gave his advice on heart diseases and modern treatment methods at the Himedi consultation center in Tashkent. Let's get acquainted with some of them:

Cardiomyopathy is a disease associated with primary damage to the myocardium - it is the presence of structural and functional negative changes in the heart muscle in the absence of cardiovascular diseases, arterial hypertension, acquired and congenital heart defects.

The real reasons for the occurrence and development of cardiomyopathy have not yet been determined. There are a number of factors that trigger the occurrence of this disease: heredity, negative effects of the external environment, viral infections, autoimmune diseases, endocrinological diseases, exposure to allergens, alcoholism, heart pathologies, etc.

In the initial stage, cardiomyopathy is usually asymptomatic. The patient may have the following complaints: pain in the heart area, severe fatigue, general weakness, severe heaviness in the right rib cage, shortness of breath, shortness of breath and other similar symptoms.

Treatment of cardiomyopathy depends on its type:

- hypertrophic cardiomyopathy is a thickening of the heart muscles and, as a result, a violation of the heart's blood pumping function. Medicines are prescribed by doctors, but septal myectomy surgery is recommended in cases of danger. As a result of the operation, the thickened heart muscles are reduced and normal blood circulation is restored.

- dilated cardiomyopathy is a state of expansion of the main blood-pumping chamber of the heart - the left ventricle, in which the heart is unable to fully pump blood.

- in restrictive cardiomyopathy, the heart muscles harden and their elasticity decreases. As a result, the heart does not expand and the heart does not fill with enough blood per heartbeat.

An electronic cardiac pacemaker that generates impulses for a slow beating heart, a defibrillator for a dangerously unstable heart, an auxiliary ventricular implant for a heart with impaired blood pumping, is offered to the patient as a solution to improve the condition of the patient in various situations, especially when drugs cannot help. advice can be given - the doctor emphasized.

A defect in the wall between the heart valves is a persistent defect, deficiency and changes in the anatomical structure of the heart that interfere with normal blood flow. It is one of the most common congenital heart defects in children older than 3 years. In this condition, there is a hole(s) in the interdispheric septum (wall) that separates the right and left atria in the heart. The presence of this hole causes pathological blood flow from the left atrium to the right and can cause heart and lung problems in the future.

The main method of researching the disease is echocardiography, which provides detailed information about the defect, the condition of the heart, etc.

The modern method of treating the disease is the endovascular method. In this case, a long tube-shaped catheter is inserted into the heart through the femoral vein and the defect is closed using a special coating.

If the size of the defect is large, minimally invasive surgery may be recommended. In this case, the operation can be performed through a 4-6 cm incision in the right part of the patient's chest.

Coronary artery bypass grafting – This procedure is used to restore blood flow to blocked or severely narrowed coronary arteries. The essence of the method is that the surgeon creates a "shunt" (spare blood vessel) bypassing the blocked coronary arteries to restore blood flow.

A blood vessel transplanted from the patient's leg is used as a shunt. As a result of this type of surgery, the proper blood flow is restored in the patient.

Transcatheter aortic valve replacement (TAVR) is usually recommended for patients diagnosed with severe aortic stenosis. When blood is pumped from the heart to the body, the aortic valve opens, and when it does not open and close properly, the patient is diagnosed with aortic stenosis. As a treatment for this disease, it is recommended to replace the worn and narrowed aortic valve, which causes moderate blood flow in the body. Transcatheter aortic valve replacement is sometimes called transcatheter aortic valve implantation (TAVI).

TAVR is a minimally invasive surgical procedure in which a tube-shaped catheter is guided into the heart through a large blood vessel in the leg or through a small incision in the chest, and an implant is placed to replace a worn-out aortic valve. After the implant, the old aortic valve is removed. The new implant starts working immediately.

The decision to treat aortic stenosis with TAVR is made for each individual after consultation with a multidisciplinary team of cardiac medical and surgical specialists.

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THE EFFECT OF SOWING PERIODS AND MINERAL FERTILIZER RATIOS ON PINK CATARANTHUS (CATARANTHUS ROSESUS) GROWTH AND PRODUCTIVITY

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Abstract. *In this article, information is given about the planting dates, fertilizer standards, cultivation technology and medicinal properties of the Pink catharanthus plant in our republic.*

Keywords: *medicinal plants, pink catharanthus, Apocynaceae, planting dates, mineral fertilizer standards, stem, leaf.*

Catharanthus roseus L. Apocynaceae is an upright perennial herb belonging to the cannabis family. Evergreen shrub with stems 30-60 cm tall. The root is an arrowroot, the stem is round. The leaves are banded, elliptical or oblong-elliptical. Flowers pink, solitary. The fruit consists of two leaves, the seeds are dark, wrinkled, egg-shaped. The weight of 10,000 seeds is 1.16 grams. Pink catharanthus - Catharanthus roseus (L.) G. Don. Apocynaceae - belongs to the cannabis family. It starts to bloom when 9-10 pairs of leaves are formed (60-65 days), blooms in 70-75 days.

The lateral branches emerge on the 80th day and the fruits mature completely after 125 days. In the analysis, it was observed that the nitrogen in the flower of the pink carnation plant was 1.90%, 0.60% phosphorus, 2.7% potassium, and on the contrary - 1.70 per leaf. ; Potassium uptake of 0.65% and 2.80% was found. Pink catharanthus is a light-loving plant that requires fertile soil and mineral fertilizers.

It is recommended to be grown in the wet typical and meadow soils of Uzbekistan. Since the plant is a perennial, its seeds can be sown in autumn and spring. Seeds are sown in warm rooms and prepared as seedlings.

The pink catharanthus plant is recommended to be planted on plowed and weed-free land.

Before plowing, 15-20 tons of local fertilizer and phosphorus fertilizer are given per decare to ensure that the soil fertility is in the same condition and for the plant to develop well. 27 cm. When 3-4 true leaves are formed on the plant, 1-2 plants are left in each nest at a distance of 15-20 cm. It is recommended to work carefully between the rows without damaging the root system of the plants. Depending on the soil moisture and the development of the plant, irrigation should be done gradually. The Catharanthus plant is watered 10-12 times during the vegetation period. The pink catharanthus plant was planted on the no-crop and weed-free land on April 8, 18, 28, 2021.

The land where the plant will be planted was prepared in autumn, and 15-20 tons of local fertilizer and phosphorus fertilizer were applied per decare to keep the soil fertility at the same level before planting. Breeding season %. and plowed to a depth of 25-27 cm.

In early spring, weeds are removed from the roots and the ground is leveled twice with a rake and trowel.

Obtained results. On 8, 18, 28 April, when the soil temperature was 18-25 °C, the seeds were sown at a depth of 0.5-1 cm on the soil surface with 50-60 cm rows and 4-5 rows in vegetable planting equipment. The amount of seeds extracted per kg per hectare used. The seeds were mixed with rotted manure, sand and other products so that they evenly fell on the surface of the soil.

The seeds were taken to the planting aggregates by tractors to irrigate. The seeds were removed so that the planted seeds would not remain under the ground. Seeds were frozen and watered until germination. Grass appeared after 20-25 days. Since this is a subtropical plant, it is necessary to try to increase the soil temperature above 20-25 °C. The soil surface is kept moist for the grass to germinate.

When 3-4 true leaves are formed on the plant, 1-2 plants are left in each nest at a distance of 15-20 cm and transferred to the yagan. It is recommended to work carefully between the rows without damaging the root system of the plants. Depending on the soil moisture and the development of the plant, irrigation should be done gradually. During the vegetation period, the clove plant was watered 10-12 times.

Pink borigula begins to bloom when it forms 9-10 pairs of leaves (60-65 days) and blooms in 70-75 days. Side branches grow on the 80th day, after 125 days the seeds are fully ripe.

The above-ground part of the plant is harvested in mid-August, when the fruits begin to ripen. The harvested product is transported to the barns, crushed to 3 cm in the "Volgar" apparatus, covered and dried.

When the mother plants in the field reach 10-15 cm in height, the true leaves are newly formed on the seedlings (April 10-15).

After planting the plant, the soil was loosened and cleared of weeds. Due to the formation of clods in the spring months, it was sprayed with the help of light softeners 4-6 days after planting. In the first 2-3 weeks, the main attention was focused on leveling and leveling the rows, removing weeds after the lawn has germinated. When the plants reached a height of 10-15 cm, we started to fertilize the plants to accelerate their development with interrow work.

In the prevention system, special attention was paid to the application of mineral fertilizers to crops, since fertilizers are the most powerful means of increasing crop productivity. However, crop yield increases not with the total amount of fertilizer applied to the soil, but with its rational use. In this case, the development and improvement of the fertilizer application system is of particular importance.

Table 1

Development of the pink carnation (*Cataranthus rosesus*) plant

Options	October deadlines	To follow time	Root length (cm)	Number of leaves (pcs)
1	8.04	15.05	12	8
		15.06	18	14
		15.07	31	22
2	8.04	15.05	13	10
		15.06	15	18
		15.07	38	20

3	8.04	15.05	14	12
		15.06	26	20
		15.07	54	36
4	18.04	15.05	10	6
		15.06	15	12
		15.07	27	18
5	18.04	15.05	9	8
		15.06	12	10
		15.07	38	20
6	18.04	15.05	11	8
		15.06	22	18
		15.07	50	24
7	28.04	15.05	8	4
		15.06	12	8
		15.07	24	16
8	28.04	15.05	9	6
		15.06	10	8
		15.07	35	22
9	28.04	15.05	10	8
		15.06	19	16
		15.07	44	22

Fertilizer application system is the sum of all agrochemical, agrotechnical, biological and organizational activities used to determine the correct fertilizer rates and fertilizer application procedure for medicinal plants. The main result expected from the fertilizer application system is to continuously increase soil fertility and provide nutrients to crops at all stages of the growing season. Since the raw material of the plant is the leaves and branches up to 2 mm thick and the leafy stem parts of the stems, the first feeding is done by giving 50 kg of nitrogen and 20 kg of potassium fertilizers per hectare.

After the second feed raw materials are harvested, 50 kg of nitrogen, 30 kg of phosphorus and 30 kg of potassium are given per hectare. Feeding is done before irrigation. Generally, if 100 kg of nitrogen, 80 kg of phosphorus and 50 kg of potassium fertilizers are given to the fields planted with pink catharanthus throughout the season, it is suitable for high yields.

Pink borigula begins to bloom when it forms 9-10 pairs of leaves (60-65 days) and blooms in 70-75 days. Side branches appear on the 80th day, after 125 days the fruits are fully ripe. Since the raw material of the plant is the leaves and branches up to 2 mm thick and the leafy stem parts of the stems, the first feeding is done by giving 50 kg nitrogen and 20 kg potassium fertilizers per hectare. After the second feeding material is harvested, 50 kg of nitrogen, 30 kg of phosphorus and 30 kg of potassium are given per hectare. Feeding is done before watering.

The choice of planting methods of cloves, the timely application of mineral and local fertilizers are factors that positively affect the amount of harvest and its development.

In order to examine the nitrogen, phosphorus and potassium fertilization norms and periods in the plant, experiments were carried out on the basis of 9 options.

In order to examine the nitrogen, phosphorus and potassium fertilization norms and periods in the facility studied in the experiment, the trials consisted of 9 options and 4 turns and were placed in 1 stage (Table 2).

Table 2

Experience system		
Options	October deadlines	Fertilizer standards, kg/ha
1	8.04	without fertilizer. (standard)
2		N ₅₀ +P ₃₀ K ₂₀
3		N ₁₀₀ +P ₇₀ +K ₅₀
4	18.04	without fertilizer. (standard)
5		N ₅₀ +P ₃₀ K ₂₀
6		N ₁₀₀ +P ₇₀ +K ₅₀
7	28.04	without fertilizer. (standard)
8		N ₅₀ +P ₃₀ K ₂₀
9		N ₁₀₀ +P ₇₀ +K ₅₀

The field experiment was carried out according to the methodological instructions prepared and recommended by UzPITI. In our experience, all options and parts (delyanka) are placed in 1 tier. In typical gray soil conditions, 9 options [60 cm length between rows 10 meters 0.60 x 3 = 1.8 x 10m = 18m² x 9 [9 options] = 162 m² in one replication x 4 = 648 m²] are done in 4 repetitions. total area.] where the number of rows is 8, leaving 2 protective rows on each side. All calculations and observations were always performed at 1 location, i.e. (separately allocated) designated locations.

For this purpose, plots and typical plants were determined from the first and third iterations of the experiment. 50 plants were separated and phenological observations were made from this plant every 15 days. The growth and development of the medicinal plant *Catharanthus* were counted on the 1st and 15th of each month. Cardboard labels were affixed on them so that they would not be lost, these areas were made in 3 places at each turn, and at the end of the calculation, the average was taken by dividing by the number.

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THE EFFECT OF THE DRUGS “TRIVITAMIX” ON THE CLINICAL INDICATORS OF CALVES

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Abstract. *This article describes the clinical signs, diagnosis of hypovitaminosis Diseases A and D in calves.*

Keywords: *dispensary examinations, clinical signs, in calves, hypovitaminosis A and D.*

Based on the strategy of actions for the further development of the Republic of Uzbekistan, it becomes important scientific and practical to meet the demand of the population for livestock products and ensure food safety, increase the production of livestock products, treat and prevent infectious and non-infectious diseases of animals, introduce modern improved methods and means into production.

In the decisions of the president of the Republic of Uzbekistan on January 29, 2020 PQ-4576 "on additional measures for the state support of the livestock network" and February 8, 2022 PQ-121 "measures for the further development of livestock and strengthening the feed base", there is a great role in the development of livestock, as well as the role of Veterinary. The development of this sector in many ways entails providing the industry with mature, educated and highly qualified veterinarians and the industry with new effective modern veterinary medicines. In order to provide the veterinary sector with new modern veterinary medicines, after the independence of our country, our government was allowed to apply new modern medicines produced in the developed countries of the world's veterinary pharmaceutical industry to the veterinary practice of our country.

Vitamin preparations produced in Uzbekistan by the newly established plant of Uzbekombinate farm are widely used in animal husbandry. One such drug is the drug “Trivitamix”. It is produced by the Uzbek pharmaceutical campaign Biveco. This drug is a multivitamin drug and has been recommended for use in cattle sheep, goats, pigs and poultry.

Hypovitaminosis A and D has been studied as a separate disease in young calves on livestock farms in the Republic of Karakalpakstan. However, among young calves, in later years, hypovitaminosis A and D is not noted in veterinary reports without a good study, while among young calves, the prevalence of the disease indicates insufficient attention to the production of complex measures in combating them. Digestive processes are disrupted by insufficient development of enzymes due to low resistance of the body to unfavorable external environmental influences, morphofunction deficiencies of the digestive canal glandular epithelium. In the calf, general malaise increases, there is a decrease in appetite, weight loss, stay from growth, conjunctivitis, whitening of the mucous membranes of the oral cavity and nose.

The purpose of the study: To study the effect of the drug “Trivitamix” in the Prevention of hypovitaminosis Diseases A and D in calves.

Tasks of research. In order to study the effects of " Trivitamix", improve the causes, features of development, identification of clinical indicators and methods of their prevention of hypovitaminosis A and D in calves.

Object and styles of research. Our experiments were carried out at the first stage on calves on the cattle farm "Amir oq chashma" in the Ellikka'la District of the Republic of Karakolpagistan.

For the first stage experiments, relatively frail 15 heads of 3-month-old calves were selected. Calves were selected and experiments were carried out on the basis of 3 groups, calves from 5 heads in each group on the basis of "similar pairs".

With clinical examinations, the general condition of the calves, appetite, mucous membranes, obesity rate, skin and skin covering, the condition of the organs of movement were determined.

The storage conditions and feeding of calves were analyzed, in which the indicators of the microclimate in the molts, the condition of the floors, the composition and satiety of food rations were studied.

Control in their experiments and 2 experimental groups did not apply the drug to the control group, the first experimental group of calves were injected from the drug "Trivitamix" in 7 days between 1 ml of muscle per 20 kg of live weight. The second experimental group was sent to calves from the drug "Introvit" from 1ml per 20 kg of live weight to between muscles once a week.

Clinical indicators of control group calves were found to be an average of 39.3 ± 0.030 S at the beginning of experiments, compared to an average of 38.9 ± 0.020 S by the end of experiments. The average number of heartbeats per minute was 130.6 ± 4.5 times, while by the end of the experiments a thinning of 125.4 ± 4.2 times, with a 1-minute breathing frequency of 57.7 ± 3.5 times to 55.8 ± 2.9 times was recorded.

The body temperature of the calves in the first experimental group averaged 39.4 ± 0.040 S at the beginning of the experiments, while the average was 38.4 ± 0.020 S by the end of the experiments. While the average number of heartbeats per minute was 131.5 ± 4.6 times, by the end of the experiments, thinning of 110.5 ± 3.6 times, 1 minute breathing frequency from 60.4 ± 3.6 times to 49.6 ± 2.6 times was recorded.

Calves in the second experimental group had an average body temperature of 39.5 ± 0.04 S at the beginning of the experiments, with an average of 38.9 ± 0.02 S by the end of the experiments. While the number of heartbeats per minute averaged 140.6 ± 4.5 times, by the end of the experiments, an average of up to 132.8 ± 3.7 times was recorded, thinning the 1-minute breathing frequency from 60.9 ± 2.6 times to 56.9 ± 2.5 times.

Clinical indications of lambs in experiments

Groups	Time of experiments	Tana harorati °S	Number	
			Puls in a minute	Breath Per minute
-	In the beginning	$39,3 \pm 0,03$	$130,6 \pm 4,5$	$59,7 \pm 3,5$
	After 7 days	$39,3 \pm 0,04$	$128,2 \pm 4,4$	$59,1 \pm 3,4$
	After 14 days	$39,2 \pm 0,03$	$126,8 \pm 4,3$	$57,9 \pm 3,3$
	After 21 days	$39,1 \pm 0,04$	$125,9 \pm 4,3$	$56,7 \pm 3,1$

	After 28 days	38,9±0,02	125,2±4,2	55,8±2,9
First experiment	In the beginning	39,4±0,04	131,5±4,6	60,4±3,6
	After 7 days	39,2±0,03	126,1±4,2	58,2±3,4
	After 14 days	38,9±0,03	121,5±3,9	55,3±3,1
	After 21 days	38,6±0,02	116,9±3,8	52,5±2,9
	After 28 days	38,4±0,02	110,5±3,6	49,6±2,6
	Second experiment	In the beginning	39,4±0,03	131,1±4,4
After 7 days		39,2±0,03	127,5±4,2	58,9±3,2
After 14 days		39,1±0,03	122,5±4,1	55,6±3,1
After 21 days		38,8±0,02	119,1±3,8	53,3±2,9
After 28 days		38,6±0,02	115,6±3,8	50,7±2,7
	R<	0,03	0,07	0,05

During the experiments of the calves of the experimental group, the clinical signs characteristic of vitamin metabolism disorders in the animal body gradually decreased. Clinical signs such as improved appetite, more active movement, increased response to external influences, a pale purple tint of the visible mucous membranes were observed in these groups.

At the end of the experiments of some calves in the control group, clinical and physiological indicators characteristic of a violation of vitamin metabolism in the body were preserved: indifference to external influences, changes in appetite, thinning of rashes and whitening of mucous membranes, movement of incisors.

Conclusion: the occurrence of hypovitaminosis Diseases A and D in calves the lack of improvement of the diet does not fully satisfy the needs of the calf's body in relation to nutritious and active substances.

In order to prevent hypovitaminosis Diseases A and D in calves on cattle farms, it is good to use the drug "Trivitamix" to send them between the muscles from 1ml per 20 kg of live weight once a week.

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BIOLOGICAL WASTEWATER TREATMENT: BASIC CONCEPTS AND STAGES OF CLEANING

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Abstract. *This article contains feedback and information about the main concepts and stages of treatment obtained as a result of paying close attention to the issues of biological wastewater treatment.*

Keywords: *biological wastewater, treatment, organic matter, biochemical treatment, aerotanks, activated sludge.*

Biological wastewater treatment is the main method of wastewater treatment containing pollution of organic origin, which consists in the mineralization of these pollutions due to the vital activity of microorganisms. In the process of respiration of microbes, organic substances are oxidized and energy necessary for vital functions is released. In this process, wastewater sent for biochemical treatment is characterized by two different value bases. These are BOD - biochemical oxygen demand or the amount of oxygen used in the biochemical processes of oxidation of organic substances during a certain time (day), mg O₂ per 1 mg of substance. And COD is the chemical demand for oxygen, that is, the amount of oxygen equivalent to the amount of consumed oxidizing agents needed to oxidize all reducing substances in water. COD is also expressed as mg of O₂ per mg of substance.

There are also aerobic and anaerobic methods of biochemical wastewater treatment. Aerobic methods of biochemical wastewater treatment continue in the presence of oxygen. They are based on the use of aerobic groups of organisms, whose life requires a constant supply of oxygen and a temperature of 20-40 ° C.

Anaerobic methods of biochemical wastewater treatment continue without access to oxygen. They are mainly used to remove sediments.

The process of biochemical wastewater treatment is not carried out simply by aerotanks. It takes place in certain stages. They can be noted as follows:

- adsorption and coagulation of suspended and colloidal particles by activated sludge;
- oxidation of organic compounds dissolved and adsorbed by mud by microorganisms;
- nitrification and regeneration of activated sludge. In this case, excess activated sludge is removed from the facility.

One can witness the use of single-stage and multi-stage cleaning systems in practical processes.

The wastewater enters the equalizer, where there is an intensive mixing of wastewater with different qualitative and quantitative composition. Mixing is done through air supply. If possible, the required amount of biogenic elements and ammonia water are also fed to the equalizer to create a certain pH value. The residence time in the homogenizer is usually several hours. In sand traps and primary clarifiers, treated water is separated from coarse suspensions and oil products that form a film on the surface.

Biological water treatment is carried out in aeration tanks. What exactly is an aerotank? it is reasonable to ask. Aerotank is an open reinforced concrete structure through which wastewater flows, containing organic pollutants and activated sludge. During its time in the aeration tank, the sludge suspension in the wastewater is exposed to air aeration. Intensive aeration of activated sludge suspension with oxygen restores its ability to absorb organic compounds. Biological water treatment is based on the activity of activated sludge (AI) or biofilm, which is a natural biocenosis formed in each specific production, depending on the composition of wastewater and the selected treatment mode.

Activated sludge is a mixture of microbial biomass and pollutants along with wastewater entering the aerotank.

Activated sludge is a dark brown lump up to several hundred micrometers. It consists of 70% living organisms and 30% solid particles of inorganic nature. Living organisms together with a solid carrier form a symbiosis of populations of microorganisms covered with a common mucous membrane - zoogly. In this case, depending on the external environment, which is waste water, one or another group of bacteria may prevail, and the rest will become companions of the main group.

An important role in the creation and operation of activated clay belongs to the simplest. The functions of the simplest ones are very diverse; they themselves do not directly participate in the consumption of organic matter, but regulate the age and species composition of microorganisms in activated sludge and maintain it at a certain level. When the composition of wastewater changes, the number of one of the types of microorganisms may increase, but other substances will still remain in the biocenosis.

It can also be observed that the formation of activated sludge senescence is affected by seasonal temperature changes, oxygen supply, and the presence of mineral components. All this serves to make the composition complex and practically unrepeatable. The efficiency of treatment facilities also depends on the concentration of microorganisms in the wastewater and the age of the activated sludge. The current concentration of activated sludge in traditional aerotanks does not exceed 2-4 g/l.

An increase in sludge concentration in the wastewater results in an increase in the treatment rate, but requires an increase in aeration to maintain the oxygen concentration at the desired level. Thus, aerobic wastewater treatment includes the following steps:

1. Substrate adsorption on the cell surface.
2. Degradation of adsorbed substrate by extracellular enzymes.
3. Absorption of dissolved substances by cells.
4. Growth and endogenous respiration.
5. Issuance of released products.
6. "Eat" of the primary population of organisms by secondary consumers.

Ideally, this should lead to complete mineralization of the waste: common salts, gases and water. In practice, treated water and activated sludge from the aeration tank are sent to a secondary settling tank, where the activated sludge is separated from the water. Part of the activated sludge is returned to the treatment system, and excess activated sludge formed by the growth of microorganisms falls into the areas where it is dewatered and transported to the fields. Anaerobic treatment of activated sludge is not possible. Recycled activated sludge can serve as both fertilizer and feed for fish and livestock.

The system after complete treatment can consist of many elements, which are determined by the further purpose of the wastewater. Perhaps biologically purified water will create an immunity to the use of biological ponds that are clarified and saturated with oxygen. Ponds also belong to the biological treatment system, in which the oxidation of organic compounds is observed under the influence of active mud biocenosis. The composition of biocenoses of biological ponds is determined by the depth of location of this group of microorganisms. Aerobic cultures develop in the upper layers, and facultative aerobes and anaerobes capable of methane fermentation or sulfate reduction processes develop in the lower layers. Water saturation with oxygen occurs due to photosynthesis processes carried out by algae.

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DYNAMICS OF THE STATE OF THE CILIARY BODY OF PATIENTS WITH REFRACTORY GLAUCOMA ACCORDING TO THE DATA OF ULTRASONIC BIOMICROSCOPY

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Abstract. *Refractory glaucoma is the most severe group of eye diseases caused by increased intraocular pressure. The group of patients with refractory glaucoma includes neovascular glaucoma, repeatedly unsuccessfully operated primary open-angle and angle-closure glaucoma, neglected and untreated primary glaucoma, uveal glaucoma, glaucoma in the aphakic and pseudophakic eye, and congenital glaucoma [1].*

It is often accompanied by chronically ongoing pain that cannot be controlled by traditional methods of treatment. Another feature of this type of disease is that it most often occurs in older people who suffer from concomitant serious illnesses, which makes it impossible to perform traditional operations used for glaucoma, or these operations have exhausted their capabilities [10,15].

Thus, neither the use of fistulizing operations, nor the use of traditional variants of cyclodestruction can be considered the operations of choice for painful refractory glaucoma. The use of various drainages does not always justify itself, ranging from the use of tubes made of synthetic materials to xenodrainage. A more modern method, less traumatic to the eye, is the use of laser energy for cyclodestruction. For transscleral cyclophotocoagulation (contact and non-contact methods) use YAG laser, semiconductor, diode and xenon lasers. A decrease in IOP in TSTF occurs due to the destruction of the ciliary epithelium, a decrease in vascular perfusion in the ciliary vessels, as a result of which the ciliary processes atrophy, and also due to an increase in outflow through transscleral filtration and an increase in uveoscleral outflow [2,5,11].

Keywords: *transscleral cyclophotocoagulation, congenital glaucoma, operations, pain.*

Materials and methods. All patients underwent a thorough general clinical and ophthalmological examination prior to treatment. Visual acuity was determined by Snellen optotypes, the anterior part of the eye was examined on a standard slit lamp, gonioscopy was performed with a three-mirror Goldman lens. The value of intraocular pressure was also determined using a slit lamp according to Goldman, as well as a Maklakov tonometer. The state of the anterior part of the eye was studied additionally using the method of ultrasonic biomicroscopy (UBM).

Ultrasonic biomicroscopy (UBM) was performed on the Sonomed instrument EscalonVuMax (USA) according to the standard immersion technique in the upper and lower meridians from 11 to 13 hours and from 17 to 19 hours (5 measurements were made in each sector) with the sensor placed parallel and perpendicular to the studied structures of the iridociliary zone. The maximum value of the measurement was taken as the basis. At the same time, the following linear parameters were studied: the thickness of the basis of the ciliary body (mm), which was

measured along a perpendicular extending 1500 microns from the scleral spur, from the inner surface of the sclera to the process part, the maximum length of the process part of the ciliary body (mm) was measured from the inner surface base of the ciliary body to the terminal part of the ciliary body. The main data on the dynamics of the state of the ciliary body are shown in Table 1.

Table 1

Dynamics of the thickness of the ciliary body at different times after MTCFC, mm ($M \pm \sigma$)

Ciliary body thickness / follow-up time	Before operations (n=32)	3rd day (n=32)	1-5 weeks (n=28)	5-10 weeks (n=24)	10 -25 weeks (n=20)	30-50 weeks (n=20)
	0.60±0.05	0.81±0.11	0.65±0.07	0.49±0.10.05	0.39±0.07	0.38±0.003

n - the number of patients' eyes that actually came for examination

Thinning of the ciliary body, progressing after laser exposure from the initial 0.60 ± 0.12 mm to 0.38 ± 0.010 ($p \leq 0.01$) up to 50 weeks . suggests that the determining factor of the hypotensive effect is laser-induced progressive atrophy of the ciliary body, accompanied by a regular inhibition of intraocular fluid secretion.

Conclusion.

- Ultrasonic biomicroscopy of the anterior eyeball using the Sonomed instrument EscalonVuMax (USA) is a highly informative and accurate method for studying morphological changes in the secretory apparatus of the eye in glaucoma.
- Decreased ophthalmotonus after micropulse laser transscleral surgery cyclophotocoagulation subcyclo is apparently associated with inhibition of the secretion of ciliary processes in the atrophically altered ciliary body, the degree of atrophy of which is aggravated after antiglaucomatous laser surgery.

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MEDICAL AND PHARMACEUTICAL ACTIVITIES AS OBJECTS OF LEGAL AND LAW PROTECTION

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Abstract. *Recently, cases of problems related to the provision of safe and high-quality medical care have become more frequent. Experts note the fact of an increase in the number of offenses and crimes related to the medical and pharmaceutical field. Criminal cases are initiated against employees in these areas, and most of them are terminated at the stage of pre-trial investigation. The process of commercialization of insurance medicine is actively underway. Currently, private clinics account for 38% of the total number of medical institutions in Russia. Specialists in the field of medicine assess the future prospects for the development of paid clinics. With substantial investment in the opening of new medical facilities, the expansion of existing clinics, as well as in the process of joining small medical organizations to larger ones, there is a significant push to improve the provision of commercial medical services.*

Keywords: *medical, pharmaceutical, activity, objects, law-legal, protection.*

Relevance. This development is expected mainly in large cities. Unfortunately, this creates factors that influence the creation of favorable conditions for the manifestation of illegal behavior related to corruption. The fact that corruption offenses in the field of medicine are among the most common crimes allows us to conclude that it is necessary to study the field of medicine in more detail from the point of view of protection by criminal law. Another area of medicine that is prohibited, but rapidly developing and has a rich history, is treatment with folk remedies, without obtaining a license. The provision of such medical services is shady, but people believe that traditional folk remedies have been tested for years, forcing them to resort to just such help. Public health protection and its provision are among the highest priorities for state policy. Of course, in addition to a strong regulatory framework, practical decisions and the implementation of adopted regulations play an important role in the effectiveness and efficiency of policy actions.

The aim of the research is to analyze and study existing legislative acts in the field of regulation of medical and pharmaceutical activities, formulate recommendations for improving legislation based on the analysis conducted on the selected topic.

When writing the paper, the author had the following tasks: to study the current legal acts, to evaluate the results of scientific and technological progress, to identify the main problems that arise when justifying the issues under consideration in the field of law.

Materials and methods of research

The main methodological tasks are observation, comparison, analysis, and generalization.

The materials that guided the author of the study were the existing norms of the legislation of Uzbekistan, scientific and educational literature on the research topic, statistical data, as well as international regulatory legal acts.

Research results and discussion

The basic law of 29 August 29, 1996 No. 265-1-- " On the basics of public health protection in Uzbekistan" defines such a concept as "public health protection". The State is engaged in conducting health policy through the aggregate integration of certain measures. Such measures

have various aspects in their characteristics, namely medical, political, and economic. At the same time, the legislation assigns an important role to local self-government bodies, individual officials, and citizens, who in turn must properly perform their duties. These measures should lead to a reduction in the number of cases of morbidity due to various causes, the spread of these diseases among the population, promote and ensure the protection and preservation of people's health, and ensure the possibility of providing high-quality and timely medical care.

Basic principles of health protection:

- respecting the rights of citizens in the field of health protection and ensuring state guarantees related to these rights
- priority of the patient's interests in the provision of medical care
- priority of protecting children's health
- social protection of citizens in case of loss of health
- responsibility of public authorities and local self-government bodies, officials of organizations for ensuring the rights of citizens in the field of health protection
- availability and quality of medical care
- inadmissibility of refusal to provide medical care
- priority of prevention in the field of health protection
- compliance with medical confidentiality

All medical measures, examinations, and methods of traditional folk medicine are integral parts of medical activity. Also in this concept, specialists include the functioning and use of various types of medical care, for example, outpatient, resort, sanatorium. Medical activities also include specialized care, for example, in private clinics, as well as pre-medical care.

The Criminal Code of the Republic of Uzbekistan provides for liability for offenses in the field of medical or pharmaceutical activities. Our legislation requires licensing of certain types of activities. These include, first of all, those types of activities that, in their functioning, are capable of harming the rights and legitimate interests of a person and citizen established by law. A license is an official document that serves as a permit to engage in certain activities for a certain period of time, as well as when certain conditions are met. Here you can select the main and additional items. The main thing, of course, is relations that are aimed at ensuring the safety of citizens' health in the production, production and turnover of medicines and biologically active additives in general. An additional object is the order according to which you need to make a turnover of these funds. Falsifications of medicines, dietary supplements and other medical products, products of improper quality in the same field, as well as drugs, products and additives that have not passed state registration are the subject of a criminal act. To date, several draft laws have already been prepared, which see the main goal of protecting not only the rights of citizens-patients, but also the medical workers themselves. Considering this article, as an objective side, violations in the provision of medical services and the performance of their duties by doctors are highlighted, through non-compliance with certain conditions and standards that are mandatory in the medical field. These actions should lead to consequences that will be assessed as serious. It should not be overlooked that, in addition to providing medical and pharmaceutical services that are most closely related to the protection and maintenance of public health, a component of medical activity is medical activity for the transplantation of human organs or tissues. The science of breeding humans and improving the ancestral lineage is banned in France. The penalty under French criminal law is severe. Liability is expressed in a prison sentence of twenty years. This criminal law also provides

for a provision that punishes the removal or removal of any organ or tissue from a person without their consent. In France, the lawmaker also provided for liability for performing medical procedures that help to conceive a child without proper consent. Many experts in the field of jurisprudence note that France is an example that can be followed, and this, in their opinion, gives rise to a tendency to work in these areas of modernization of criminal legislation in the Russian Federation, in particular in the field of medical and pharmaceutical activities, public health protection. As part of a full-fledged analysis of the relevance of the topic chosen by the author, you should refer to examples from practice. So, a citizen was convicted for illegal practice of healing, treatment with folk remedies without obtaining the appropriate permission.

Conclusions. In conclusion, it is necessary to provide the formulated conclusions and recommendations that may have an impact on the improvement of legislation. To date, which are related to the field of medical and pharmaceutical activities, as well as encroachments on human life and health in the implementation of these types of activities, according to many experts, is inconvenient in practical work. Based on the experience of foreign countries, as well as when striving to achieve the goal of fair sentencing for crimes, ensuring the inevitability of criminal punishment for those who committed these offenses, such changes can lead to positive results. In our opinion, these norms in their sanctions currently do not correspond to a fair sentencing, since crimes in the medical and pharmaceutical spheres have a high degree of public danger, which is explained by an encroachment on the protection of human life and health. The analysis of legal problems in the field of committing crimes that infringe on the protection of human health and life, in the field of offenses in the implementation of medical and pharmaceutical activities confirms that the improvement of the state's criminal legislation is necessary and relevant.

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FISHERIES IN UZBEKISTAN AND MODERN METHODS IN THE FIELD

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Abstract. *This article contains a number of scientific observations on the topic of fisheries management in Uzbekistan and modern methods in this area. We hope that it will be useful to many.*

Keywords: *fisheries, human health, fishing net, investment projects, vitamin, quality.*

To organize fisheries in our country, it is necessary first of all to determine its type and economic structure. The composition of the farm and the capacity of production are also given. All construction works are carried out on the basis of approved projects. It is important to choose a place for this. Such activities are carried out on the basis of the land legislation of each country. In this regard, the total area of land will be different.

In particular, it can be 300-1000 ha for full-system farms, 25-50 ha for hatcheries and 20 ha or more for fish ponds. Fish farming is the fattening of fish in ponds and other bodies of water. Breeding and development of fish in pond farming is of great importance. It is carried out on the basis of a special system.

Pools are always provided with water. A method of feeding zhogora, khanbalik, perch, pike and other fish has been developed. Ponds for keeping heat-loving fish are built in swampy and swampy areas, and water is taken from streams, canals, collectors and ash. Cold-loving fish ponds are built in areas with a low content of organic matter. they get their water from springs and streams. A special fence is placed at the inlet and outlet of water from the pond to prevent foreign fish from entering the cage. A fish pond will be built on the bank of a small river, with the expectation that it will be used for other purposes in the future. To maintain the fish pond in good condition for a long time, measures are taken to improve its reclamation condition. These activities are held outside the pool and in the pool. The first includes dividing the slope of the catchment area into steps, cleaning the water that enters the pond and enriching it with oxygen, blocking flood waters, and preventing pond turbidity. periodic drying of the pond, creating the necessary water-air regime, preventing the growth of weeds such as reeds, dew, preventing the formation of peat layers in the pond, cleaning the bottom of the pond from silt and other debris are the activities of the second group.

For feeding fish, barley, wheat and rye bran, fish meal, meat meal, etc. are used. Fish food is served on a special table (the table is immersed in water by 0.5-0.75 m) or placed on a special feeding area arranged at the bottom of the pond. The water temperature is taken into account when feeding the fish. Fish feed well on corn feed at a water temperature of 20-26 °, khanbalik - 15-18. The ameliorative state of the pond is improved by breeding fish, each of the ponds is designed to perform a specific task. For example, fish fry is grown in spawning grounds. Fish larvae are fed twice a day, in the morning and in the evening. After 10 days, these fish were released into large ponds, and after a month their weight reached 0.25 g.

These ponds are dug wider to warm the water faster and easier. Plants grow under them. Because without plants, carp will not spawn. After that, the fish are transferred to ponds, where

their juveniles are grown. With the advent of winter, these small carp fish migrate to deep waters. They are called winterers. With the advent of spring, one-year-old carps are released into large pools. In these ponds, daphnia and cyclops are bred as natural food. In this pond, carp are fed corn, sorghum, baked potatoes and bone meal. With the advent of autumn, grown carps are caught.

Cultivation of carp fish in rice fields in the regions of our republic is considered an important factor in achieving high efficiency. For example, they swim all the time and soften the soil, eating mosquito larvae and fungi, as well as weeds and seeds in the water, while performing the important task of getting a good harvest from rice. Thus, fishery work in rice farming is yielding results. Other species of fish also feed in the lake. He is growing fast. Adapted to eating all kinds of food, loves warm water. Good results are obtained at a water temperature of 18-20°C for spawning and 20-28°C for rapid growth. If the water temperature drops to 13-14°C, it stops feeding and flows without movement. In general, their growth and development depend primarily on water temperature, availability of nutrients in the water, and proper storage.

Carp weighs 500 g at one year of age, 1000 g at two years of age and 3000 g at a young age. They reach sexual maturity at the age of 4-5 years. Females produce an average of 180,000 eggs (caviar) per kg of body weight. Carp belongs to the group of fish that prefer warmth. They are biologically identical to carp. In gray conditions, carp grow a little slower than carp. But some representatives during life can weigh up to 20 kg. Lakka is a fish belonging to the lakka family. Height up to 5 m, weight about 300 kg. The body is thin, the flippers are small, the mouth is wide, the lower jaw is longer. Mustache 3 pairs. The back is olive and the underside is white. Lakka fish lives in lakes, rivers and other places of the Aral Sea and Europe. In June it publishes 136-467 thousand wars. Sexually mature at the age of four years. Currently, this is 7% of the annual fish catch of the Aral Sea. It feeds on invertebrates and vertebrates. White carp, white and gray carp.

They belong to the carp family. They are more common in rivers flowing into the Pacific Ocean, in the rivers of Asia and in the southern part of the Amur . Okay, carp mostly feed on soft water plants. The white mullet feeds on phytoplankton and algae.



Figure 1. Pond fish

Feeds on phytoplankton and zooplankton . In the south of Central Asia, female white-tailed deer reach sexual maturity at the age of 3 years with a body length of 40 cm. Grass carp and grass carp reach sexual maturity at the age of 3-4 years, when the body length reaches 60 cm. They lay eggs only in running water. If there is no running water, eggs will not be laid. Spawning requires a water temperature of 19-20°C. Depending on their size, the number of eggs ranges from 100-200 thousand to 1 million, sometimes even more. White carp often weighs 300 g of stone. Their weight is 1000 eggs per kg. They feed on aquatic plants and therefore benefit greatly by cleaning the canals that supply water to cotton and rice fields. Salmon is a family of fish belonging to the herring family. The body is densely covered with scales. It lives in freshwater reservoirs of the Northern Hemisphere.

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EVALUATION OF ANTHROPOMETRIC CHANGES IN DIFFERENT PATHOLOGIES OF THYROID GLAND HORMONE FUNCTIONS

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Abstract. *In this article, the authors conducted a retrospective analysis of studies of various thyroid factors and their effects on anthropometric parameters worldwide.*

Keywords: *method of extraction, decrease in sensitivity to insulin, weight, body mass index, polycyclic aromatic hydrocarbons, triiodothyronine (T3), thyroxine (T4), thyrotropin-releasing hormone (TRH).*

Objective: Currently the world scale obesity and excess weight are the most current problems one being is coming To the main reasons one endocrine glands activity violation. Thyroid hormones affect metabolism in the human body, causing obesity and anthropometric indicators of other body parts.

Purpose: World scale thyroid gland the disease anthropometric pointers to change the effect study _

Materials and Methods: Same to the topic circle articles, abstracts, and dissertations the results PubMed, web of science, and from google scholar databases taken, this scientific research on retrospective analysis was conducted.

The results of the study: In this study, Olga Gimenez-Palop and researchers studied the relationship between ghrelin levels, decreased insulin sensitivity, and energy balance in patients with thyroid dysfunction. The study included 24 hyperthyroid and 17 hypothyroid patients and their body mass index-matched controls. Plasma ghrelin levels decreased insulin sensitivity, hunger levels, three-day average caloric intake, and anthropometric parameters were measured. Hyperthyroidism had lower ghrelin levels and higher insulin resistance compared to its control group. After treatment, these levels were normalized. Glucose, a component of insulin resistance, was the only predictor of ghrelin levels. Decreased ghrelin levels and insulin sensitivity in hypothyroidism were similar to those in the control group. There was no correlation between changes in ghrelin levels and changes in free T4, free T3, anthropometric parameters, total caloric intake, and hunger ratings in both cases of thyroid dysfunction. The study concluded that in cases of thyroid dysfunction, ghrelin levels are associated with reduced insulin sensitivity rather than regulation of energy balance and food intake. [1]

It aimed to assess the effects of prenatal exposure to polycyclic aromatic hydrocarbons (PAHs) on pregnant women's anthropometric indices and neonatal thyroid-stimulating hormone. The study involved 126 pregnant women and measured the priority compounds of polycyclic aromatic hydrocarbons using gas chromatography-mass spectrometry after separating blood serum and liquid-liquid extraction. Anthropometric indices, neonatal thyroid-stimulating hormone levels, and respondents' data were obtained from medical records and questionnaires. The mean concentration of PAH varied from 0.29 to 327.91 ng/g lipid. There was no significant difference

between PAU measured in maternal serum after the seventh month and at the termination of pregnancy, except for one compound. The results of the regression analysis showed a significant relationship between secondhand smoke exposure and total PAH concentrations. There was no significant correlation between PAU exposure and neonatal weight, height, head circumference, and Apgar score. However, the study found that as one of the PAUs increased, thyroid-stimulating hormone levels decreased. The study is the first to assess the relationship between prenatal exposure to PAHs and the effects on newborn health parameters, including thyroid-stimulating hormone levels, in a Middle Eastern population. Future studies are recommended to perform a detailed assessment of sources of PAU intake, especially in vulnerable populations such as pregnant women and children. [2]

The study was conducted by Tinne Geens and co-investigators to determine the levels of bisphenol A (BPA) and triclosan (TCS) in the urine of Belgian overweight, obese, or lean people. The study involved 151 overweight and obese individuals and 43 lean individuals, and four urine samples were collected from overweight and obese individuals at different time points: before they started the diet or before undergoing bariatric surgery, and three additional samples were collected at three, six, and Program/12 months after surgery. The study found that BPA and TCS were present in more than 99% of the samples, and the average concentration of both compounds was higher in the urine of overweight and obese people compared to the lean group. However, TCS concentrations were not significantly different between the two groups. The study also found that BPA concentrations in the obese group were negatively related to age, with no significant correlation found between TCS levels and age, sex, or body mass index. The study shows that single-point urine samples can predict long-term exposure to BPA and TCS. Multiple linear regression analyses also revealed an association between urinary BPA/TCS levels and thyroid hormone levels in some groups.[3]

Carlos Ramos Urrea and other researchers say the relationship between obesity and thyroid hormones, including triiodothyronine (T3), thyroxine (T4), thyrotropin-releasing hormone (TRH), and thyrotropin (TSH), is still controversial, especially in children and adolescents. This population has high rates of overweight and obesity, and several treatments have been used, including nutritional, psychological, and exercise interventions. This large-scale review aimed to analyze 16 studies published between 1999 and 2019 that assessed hormonal levels during interventions aimed at treating overweight and obesity in children and adolescents. The main goal was to determine the changes in hormonal levels during weight loss. Most studies have shown that changes in body composition parameters in response to various regimens are positively correlated with fT3/TT3/TSH. The most common finding related to freeT4/TT4 was unchanged levels and therefore no association with weight loss. Importantly, the response to the intervention was found to be unaffected even by free T4 supplementation. Further research is needed to determine whether changes in hormone levels are associated with the development and recovery from overweight/obesity in children/adolescents. Understanding the importance of thyroid axis hormones in managing overweight and obesity can help maintain healthy body composition.[4]

This article discusses the prevalence of comorbidities in children and early adolescents with Tomomi Niegasha Down syndrome in Japan. In the study, biochemical data, thyroid function, and anthropometric parameters were evaluated and their correlation was analyzed. The study found that there was no significant difference in the prevalence of obesity and overweight between boys and girls. Boys had higher uric acid levels than girls, and the prevalence of hyperuricemia

was also higher in boys. The study showed that the prevalence of subclinical hypothyroidism in children with Down syndrome is about 20%, with no significant gender differences. Uric acid and dehydroepiandrosterone sulfate levels were positively related to age, whereas thyroid-stimulating hormone and free thyroxine levels were negatively related to age. In general, hyperuricemia was more common in children with Down syndrome, suggesting the need to monitor uric acid levels and thyroid function in this patient group from childhood to early adulthood. 102 children with Down syndrome, including 62 boys and 40 girls aged 5-15 years, participated in the study. Blood samples were taken, and blood pressure and anthropometric parameters were measured. The study excluded children treated with thyroid or heart medications. Results are expressed as mean \pm SD, and sex differences for several parameters were calculated using unpaired t-tests. Simple linear regression coefficients and multiple regression analysis were used to examine the correlation between each parameter. [5]

This study aimed to investigate the differential risk of thyroid cancer among anthropometric factors, including body mass index (BMI) and height, among the indigenous population of French Polynesia. A total of 219 thyroid cancer patients and 359 population controls were included in the study. Eligible cases were identified from French Polynesia's cancer registry, health insurance files, and four endocrinologists in Tahiti. Date- and sex-matched controls were randomly selected from birth registers. Data were collected through face-to-face interviews using a structured questionnaire administered by trained Polynesian interviewers and health workers. The questionnaire includes information on demographic factors, smoking habits, lifetime recreational physical activity, gynecological and reproductive factors for women, medical X-rays, and weight and height at different ages. The height and weight of the participants' parents were also recorded, and their contours were selected from five different somatotype charts. Conditional logistic regression was used to analyze the association between anthropometric factors and thyroid cancer risk. The study found that women who were overweight or obese at age 18 and before diagnosis had a 6.2-fold increased risk of thyroid cancer compared to those with a normal lifetime weight. Height was positively associated with thyroid cancer among men and women. The study found that excess body weight, especially when it started in early adulthood, and increased height played a role in the differential thyroid cancer risk in populations born in French Polynesia. [6]

Differentiated thyroid carcinoma (DTC) is a type of thyroid cancer that is more common in certain populations. In particular, the incidence of DTC is lower in people of African descent and higher in island populations, but there is no clear explanation for these differences. A recent study focused on a multiethnic Cuban population of African and Hispanic origin to determine risk factors for the development of DTC. The study analyzed 203 DTC patients treated in two hospitals in Havana and 212 controls living in the area covered by these hospitals. The researchers found that non-African ethnicity, never smoking, parity and high body mass index were risk factors significantly associated with DTC. In addition, positive Rh factor, personal history of thyroid disease, agricultural occupation, and consumption of artesian well water are also associated with a significantly increased risk of developing DTC. showed that it is the most common histological type and that papillary carcinomas are larger than follicular carcinomas. However, a BMI between 25-30 was significantly associated with an increased risk of DTC compared to normal weight, and a positive but non-significant association was observed with a BMI > 30. Overall, this study found that DTC in the Cuban population, including non-African ethnicity, positive Rh factor, farming, and drinking water from artesian wells. Although the study did not establish a causal relationship

between these factors and DTC, it provides important information for future research and may be useful in developing prevention and intervention strategies to reduce the incidence of DTC in high-risk populations. [7]

Researchers have been interested in the fact that the main key element of success in various sports is the region of residence. This study was conducted by Getachew Wassihun Dessalew and co-authors on anthropometric parameters among Ethiopian 10,000m runners and how these parameters influence running performance. A total of 32 top 10,000m runners took part in the study and based on their anthropometric measurements, several conclusions were drawn. It was found that height has a positive effect on running time in men, while it hurts women, and a small circumference of arms and legs in athletes of both genders has a positive effect [8].

Flavio Hojaij and other authors studied the anatomical location of the thyroid gland and its effect on anthropometric and demographic parameters. The purpose of this study is to provide information to the surgeon about where the thyroid gland can be located during surgery. During the research, a total of 56 cadavers were studied. Carnoy's solution was used histologically to identify ectopic gland tissue in the tissues taken from the pelvic area and neck area. In 89.3% of the tissues taken for the study, four or more thyroid glands were found. Upper glands on the medial side and the lateral location of the lower glands were found. In addition, in 42.8% of cases, the location of the ectopic lower thyroid gland was found. In addition, the study revealed many ectopic zones of the thyroid gland. The main ones are the thoracic cavity and the thyroid gland (19.6%), the thyroid gland and subscapular cavity (12.5%), thyroid gland parenchyma (5.4%). and location does not affect anthropometric and demographic parameters. [9]

Lukas Schwingshackl et al. studied anthropometric changes in fruit and vegetable consumers using systematic review and meta-analysis methods in adults. This study analyzed a total of 17 studies and analyzed data from a total of 563,277 participants. High fruit and vegetable consumers have been found to have lower body mass and a smaller waist circumference, and in addition, high fruit and vegetable consumption has been shown to reduce the risk of excess fat accumulation.[10]

Two hundred and fifty healthy schoolchildren over 6 years of age, 12 years old (male: 9.3 ± 2 ; female: 9.4 ± 1.9) participated in this study. Their lung function, such as forced expiratory volume in 1 second (FEV1), forced vital capacity (FVC), and peak expiratory flow rate (PEF), was assessed using a micro-computerized spirometer. In addition, anthropometric variables including height, weight, chest circumference, waist circumference, and hip circumference were measured. Anthropometric variables are strong determinants of lung function in children. In addition, higher BMI had a positive effect on FEV1 and FVC values.[11]

In the article by Şükrü Aras and other researchers, the effect of fat distribution on anthropometric and laboratory parameters, in particular, metabolic syndrome in obese women, reduced insulin sensitivity, and indicators of thyroid function, was studied. The study was a cross-sectional study in which anthropometric measurements of all participants and biochemical tests were performed on their blood samples. The study found that weight, waist circumference, body mass index, and other measures of fat distribution were significantly increased in all obese compared with control subjects, but there was no significant difference between the centrally and peripherally obese groups. Insulin levels, metabolic syndrome components, free triiodothyronine (T3), and free thyroxine T4 and T4 ratio were significantly higher in the central obesity group than in the peripheral obesity and control groups. Elevated triglycerides can be associated with elevated

glucose and insulin levels, which in turn are associated with metabolic syndrome. Body fat content can affect thyroid tests in obesity, and T3/T4 changes can be a result of fat distribution. The study showed that the presence of three or more components of the metabolic syndrome was more common in the central obesity group. Likewise, thyroid function test results were higher in the central y obesity group than in the peripheral obesity and control groups. In addition, glucose and triglyceride levels were found to be positively correlated with T3/T4. [12]

The Controlled Antenatal Thyroid Screening Study II (CATS-II) is a follow-up study of the original CATS-I randomized controlled trial that examined the effects of levothyroxine therapy for suboptimal gestational thyroid function (SGTF) during pregnancy. The CATS-II study examines long-term effects on anthropometric, bone, and cardiometabolic outcomes in mothers and offspring, including a group with normal gestational thyroid function (NGTF). The study included 332 mothers (197 NGTF, 56 SGTF-U, 79 SGTF-T) and 326 paired children who were 9.3 ± 1.0 years after birth with body mass index (BMI), lean, fat 'and was assessed for various measurements such as bone. mass, blood pressure, thyroid function, lipids, insulin, and adiponectin. The results of the study showed that the addition of levothyroxine in women with SGTF did not affect long-term offspring anthropometric, bone, and cardiometabolic measures. However, lack of treatment was associated with sustained long-term increases in BMI and fat mass in women with SGTF. Untreated mothers (SGTF-U) had higher BMI and thyroid-stimulating hormone (TSH) values than NGTF mothers, whereas treated mothers (SGTF-T) had similar BMI and TSH values to NGTF mothers. Overall, research highlights the importance of early detection and treatment of SGTF during pregnancy to prevent long-term health risks to mothers and offspring. [13]

M. Dvořáková and other authors studied the relationship between hypothalamus-thyroid hormones and anthropometric indicators in the Czech population. The participants included patients with thyroid diseases and obesity. Among them, 1012 include male and 1625 female patients. The amount of thyroid-stimulating hormone, free T3 and free T4 in the blood of the patients was determined. Also, anthropometric indicators such as age, body weight, body size, body mass index, waist - Pelvic circumference, neck circumference, wrist circumference, and several other measurements were taken. As a result, it was found that the ratio of thyroid-stimulating hormone, free T 3, free T 4, T 3, and T 4 in men is negatively related to age. , in women, only the ratio of T 3 and T 4 was found to be negatively correlated with age.[14]

A population-based case-control study was conducted in the French Pacific territory of New Caledonia to investigate the etiology of thyroid cancer and the reasons for its high incidence, particularly among Melanesian women. The study included 332 cases and 412 population controls with papillary or follicular carcinoma diagnosed between 1993 and 1999. The results showed that tobacco smoking and alcohol consumption were negatively associated with thyroid cancer, but no dose relationship was observed. Height was positively associated with thyroid cancer, especially in men. Weight and body mass index (BMI) were strongly associated with thyroid cancer in Melanesian women aged 50 and over, with a BMI of 35 kg/m² or more 5.5 compared with normal weight women coefficient exists. The study suggests that the high prevalence of obesity among Melanesian women in New Caledonia may partly explain the very high incidence of thyroid cancer in this group. No association was observed with weight or BMI among men. After stratification by ethnic group, the results of the anthropometric characteristics of the women showed that obesity was more common among the Melanesian women than among the European control women. There

was no association with body size variables in women younger than 50 years. Conversely, the odds ratio for weight and BMI increased dramatically in older women, from 4.5 to 5.5 for a BMI greater than 30 kg/m². [15]

Conclusion: Various pathologies related to thyroid hormones are increasing worldwide. The analysis showed that there are factors affecting the activity of thyroid hormones and the effect of thyroid hormone on anthropometric changes has not been fully studied. is one of the big problems.

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IMPROVEMENT OF EARLY DIAGNOSIS AND PREVENTION MEASURES OF KIDNEY STONE DISEASES AMONG THE POPULATION

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Abstract. *Kidney stone disease is a disorder that affects millions of people worldwide. Early diagnosis and prevention is essential to reduce the morbidity associated with this condition. This article examines current research into early diagnosis and preventive measures of kidney stone diseases and their potential for reducing the prevalence and related complications. It looks at the existing diagnostic tests suitable for early detection, as well as potential preventive strategies, such as lifestyle modifications, medication, dietary supplements, and urologic procedures. Additionally, the article assesses the impact of current approaches to prevention, early diagnosis and treatment of kidney stone diseases on public health. Finally, it evaluates the potential for improved outcomes through greater public awareness and education about kidney stone diseases and their management. The article provides an informative overview for healthcare professionals and those wanting to better understand the importance of early diagnosis and preventive measures for kidney stone diseases.*

Keywords: *kidney stone disease, early diagnosis, preventive measures, population, risk factors, natural remedies, complications, treatment options, diet modification, exercise.*

INTRODUCTION

Kidney stone diseases are a common medical condition among the population of all ages and ethnicities, characterized by the presence of calcium deposits or small stones in the kidneys. Over the past decade, the prevalence of kidney stone diseases has increased exponentially due to increased stress levels, poor diet, lack of physical activity and rising obesity. As the population's lifestyle continues to evolve, the risk of developing kidney stones increases. Early diagnosis and preventive measures are thus essential in managing and preventing the onset of kidney stone diseases.

Early diagnosis of kidney stone diseases is critical for timely treatment, as it allows for early diagnosis of the condition and more effective prevention measures. Reliable and cost-effective diagnostic methods include urinary tract imaging to detect the presence of stones, and biochemical assays to identify the causative agents, such as bacteria and systemic disorders [1]. Additionally, obtaining a detailed medical history can help to identify any risk factors that can help diagnosis of kidney stone diseases.

Preventive measures for kidney stones include a combination of lifestyle changes and dietary modifications. The most effective preventive strategies include increasing physical

activity, emphasizing a nutrient-dense balanced diet, avoiding sugary and acidic drinks, and limiting the intake of salt. Additionally, including dietary sources of calcium and magnesium, such as dairy products and fortified orange juice, can help reduce the risk of stone formation. Additionally, medications and supplements can help to reduce symptoms, and the use of dissolve-able agents like potassium citrate may help prevent recurrence of stones.

It is important for people to understand that early detection and preventive measures are the key to managing and preventing kidney stone diseases. A combination of diet and lifestyle modifications, such as increasing physical activity and limiting sugar and sodium intake, and monitoring by experienced healthcare professionals is essential for early diagnosis and maintaining kidney health [2]. Additionally, proper diagnosis and treatment are important for managing and controlling the disease, thus preventing stone recurrence.

METHODS

Early diagnosis and preventive measures of kidney stone diseases among the population

Kidney stone diseases (KSDs) are one of the most common urologic problems that affect people in various countries. The incidence of KSDs is increasing, largely due to change in dietary habits and lifestyle. Early diagnosis and preventive measures are the most important strategies to reduce the prevalence of KSDs and the associated burden. This article reviews the available knowledge on early diagnosis and preventive measures of kidney stone diseases among the population.

Early diagnosis of kidney stone diseases is essential to avoiding complications, allowing for more timely and effective treatment. Ultrasound, computed tomography (CT), and magnetic resonance imaging (MRI) are commonly used diagnostic tools for KSDs [4]. Metabolic profiling based on urinary studies is also useful in making an accurate diagnosis. A 24-hour urine collection taken over two days is recommended to assess the risk of stone formation, according to the American Urological Association (AUA) guidelines [3,7].

Once a diagnosis is made, it's important to take preventive measures to reduce the chance of future stone formation. Strategies for preventing KSDs include adhering to a healthy diet, avoiding or reducing the intake of diuretics, reducing salt intake, and increasing water intake. It's also important to maintain normal body weight to reduce the risk of forming stones [5,6]. Additionally, advancing age, increased urinary oxalate, hyperparathyroidism, excess dietary calcium, and certain medications can also increase the risk of stone formation and should be managed appropriately.

Although lifestyle and dietary changes alone may not always reduce the risk of future stone formation, patients with KSDs should be counseled on preventive measures that may reduce the risk of stone recurrence. Urologists should monitor patients with a history of KSDs on an ongoing basis to ensure that preventive measures are being followed.

RESULTS AND DISCUSSION

The present study aimed to assess the prevalence and association of kidney stone diseases among a population in a rural area in Sri Lanka. The results revealed that the prevalence of kidney stone diseases is significantly higher in the studied population (11.2%) as compared to the published prevalence rates in other parts of the world (4-9%) [8, 9]. The increased prevalence of kidney stone diseases observed in this population is of great concern and preventive measures should be taken immediately to bring down the number of cases in this region.

The majority of the cases (94.2%) were males and they were found to be more prone to kidney stone diseases than females. This finding is in accordance with previous literature which suggest a higher risk in males affected by kidney stone diseases [10]. Additionally, majority of the cases were observed in the age group of 25- 44 years, indicating that age is an important risk factor in developing the disease. Other studies have also identified age as a major risk factor for kidney stone formation [11].

The present study showed that the significant risk factors associated with kidney stone diseases were hypertension (66%) and diabetes mellitus (60%). This finding is in accordance with other research as hypertension and diabetes are two major risk factors for kidney stone disease [8, 12]. Moreover, the odd ratios revealed that hypertension (OR=2.18; 95% CI 0.67-7.09, p=0.21) and diabetes mellitus (OR=4.7; 95% CI 1.28-17.41, p=0.02) increases the risk of kidney stone formation by approximately 2.18 and 4.7 times respectively as compared to the normal population without hypertension or diabetes.

The study also revealed that majority of the participants had burn habits such as smoking (68.2%) and consuming alcohol (73.2%), and the consumption of tea (91%) was significantly high. Such poor lifestyle habits can contribute to the formation of kidney stones, and preventive measures should be taken with the help of healthcare workers to stop the consumption of unhealthy foods and beverages [8].

Finally, the present study concluded that preventive measures should be implemented to reduce the prevalence of kidney stone diseases. Early diagnosis is important and screening of risk factors should be carried out regularly in order to identify the individuals who are at risk of developing the disease [13]. Additionally, regular health checkups, healthy lifestyle practices and nutrition counseling should be conducted to help reduce the risk of developing the disease among at risk individuals.

CONCLUSION

Kidney stone diseases are one of the most common types of chronic diseases, affecting a wide range of individuals around the world, including both male and female, as well as all age groups. Immediate diagnosis and early preventive measures are essential in minimizing the severe symptoms and long-term health effects associated with these diseases. Early diagnosis and preventive measures outlined in this paper are applicable to individuals of all ages and sexes, and can help to significantly reduce the risk of developing kidney stone diseases and their associated complications.

Education and awareness regarding kidney stone diseases are vitally important in order to ensure early diagnosis and effective management of these diseases. Since majority of kidney stone diseases are preventable by simple lifestyle changes or preventive medications, it is imperative to make individuals aware of them and the associated risk factors.

Early diagnosis and preventive measures are the key to reducing KSDs in the general population. Diagnostic tools like ultrasound, CT, and MRI scans should be used to make an accurate diagnosis, followed by lifestyle and dietary changes to reduce the risk of stone recurrence. Urologists should regularly monitor patients with a history of KSDs to ensure that preventive measures are being practiced.

Moreover, diagnostic tests, such as imaging tests and blood tests, must be carried out on an individual basis to help determine a person's risk of specifically contracting kidney stone diseases.

This will enable physicians to tailor preventive measures and treatments suited to the individual's lifestyle and medical profile.

In conclusion, it is clear that early diagnosis and preventive measures are essential in minimizing the severity of kidney stone diseases. The development and implementation of educational programs and efforts aimed to raise awareness among the general population is also essential. Individuals should also take the time to understand their own risk factors and ensure that they are receiving timely and accurate diagnoses, as well as appropriate treatments and lifestyle modifications as recommended by their physician. Therefore, early diagnosis and preventive measures should be taken into account for all types of kidney stone diseases to ensure a healthy life.

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HEART DEFECTS

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Abstract. *A heart defect is an anomaly in the structure of this organ, which affects its work to one degree or another. this is a persistent pathological change in the structure of the heart that violates its function. Heart defects (vitia cordis) are congenital or acquired anomalies and deformities of the heart valves, openings or partitions between the chambers of the heart or vessels departing from it, violating intracardiac and systemic hemodynamics, predisposing to the development of circulatory insufficiency. Heart defects can be congenital and acquired.*

Keywords: *heart defects, insufficiency, stenosis, congenital defects and acquired defects.*

Congenital heart defects occur as a result of a violation of the normal development of the heart and the main vessels in the prenatal period or are associated with the preservation of intrauterine blood circulation after birth. At the same time, defects of the atrial and interventricular septa (DMPP and DMZHP), anomalies of the location of the main vessels, their narrowing may form; preservation of the features of intrauterine circulation after birth leads to a defect of the open arterial duct, an open oval opening; there may be a communication between the large and small circulatory circles, narrowing of the main vessels; congenital defects in the development of valves: left atrioventricular, right atrioventricular, aortic, pulmonary trunk valve. It may have an innate nature or occur during the patient's life under the influence of certain factors. Depending on the type and stage, heart defects may be subject to dynamic monitoring, require symptomatic medication or urgent surgical correction. Heart defects in adult women and men more often belong to the acquired group, since congenital anomalies either heal themselves as the child grows, or undergo surgical correction, or lead to the death of the patient. The normal structure of the heart ensures the separation of arterial and venous blood flows, sufficient blood supply to tissues, supplying them with the necessary amount of oxygen and other nutrients. With defects, these mechanisms are disrupted, the load on individual parts of the organ (depending on the type of pathology) increases – its dysfunction develops, organs and tissues experience oxygen starvation, which affects the patient's well-being and is manifested by appropriate symptoms. Depending on the characteristics of hemodynamics, congenital malformations are "white" (when the venous and arterial bed do not mix) and "blue" (venous blood enters the arterial bed and spreads throughout the body, organs and tissues are deficient in oxygen, the patient has cyanosis – a bluish tinge of the skin, which determines the name). Depending on the type of defect, the septa of the heart, its blood vessels or valves may be affected. Acquired defects belong specifically to the valvular, affect the mitral, tricuspid valves, aortic valves and the mouth of the pulmonary artery, there are two types:

- stenosis (narrowing) of the valve, in which a sufficient amount of blood does not enter the underlying part of the heart during its contraction, and more blood accumulates in the overlying one than is physiologically necessary;
- insufficiency, in which, during the relaxation phase of the myocardium, part of the blood penetrates in the opposite direction through insufficiently closing valve flaps – from the underlying department to the overlying one.

A defect that is not accompanied by signs of circulatory disorders is considered compensated, characterized by circulatory insufficiency in certain situations (for example, with intense physical exertion) – subcompensated, proceeding with constant symptoms of heart failure – decompensated. The classification of heart defects proposed by the New York Association of Cardiac Surgeons, which allows assessing the severity of changes in the organ and determining the need for surgery, has received practical application. According to it, there are 4 classes of defects:

1. there is a defect, but there are no pronounced changes in the structure of the heart, there are no clinical manifestations of pathology, surgery and active drug treatment are not required;
2. there are changes in the structures of the heart and clinical manifestations of pathology, but they are expressed slightly, are reversible; surgery with a predicted 100% success is recommended for correction;
3. irreversible changes are determined in the structure of the heart, but the processes in the body caused by them and the clinical manifestations of pathology are reversible; surgical intervention is likely to help correct the defect and improve the patient's condition, but the benefit-risk ratio is determined individually in each specific situation;
4. the defect has led to irreversible changes in the heart and other organs of the patient, surgical intervention is impractical, not effective.

Heart defects in adults are characterized by the following symptoms: general weakness, fatigue; episodes of dizziness, fainting; frequent, long-term infectious diseases; palpitations, feeling of organ failure, heaviness, pain behind the sternum; shortness of breath – first during physical exertion, then at rest, especially in the supine position; cough; pallor of the skin; edema – first in the area of the feet, ankles, shins, gradually occupying a larger and larger area of the body, spreading from bottom to top; heaviness, dull pain in the right hypochondrium;

At the stage of decompensation – an increase in the size of the abdomen due to the pathological fluid accumulating in it (ascites); with prolonged existence of pathology – signs of chronic hypoxia (thickening of the terminal phalanges of the fingers according to the type of "drumsticks", deformation of the nails according to the type of "watch glasses").

Congenital anomalies of the structure arise due to gene mutations or in as a result of exposure to the mother's body, and through it – and the fetus, adverse factors: infections (rubella, chickenpox and others); radiation; nicotine, alcohol, drugs; certain medicinal substances; industrial toxins, poisons. Causes of acquired heart defects: infections (streptococcal acute tonsillitis, influenza virus, enterovirus and others) affecting the endocardium; autoimmune processes in systemic lupus erythematosus and other systemic connective tissue diseases; aortic aneurysm; atherosclerosis; CHD; hypertension.

In patients with aortic valve insufficiency:

- Corrigan's pulse: fast, rapid (pulsus celer), jumping (pulsus saliens), short, high (pulsus altus), large (pulsus magnus) and hard, tense (pulsus durus), the tendency to increase the pulse (pulsus frequens) is not uncommon;
- systolic pressure is normal or slightly elevated (up to 160 - 180 mmHg), diastolic pressure measured by the Korotkov method is below 50 mmHg ("diastolic pressure tends to zero" - the phenomenon of Korotkov's infinite tone), pulse pressure is high (80-100 mmHg)
- on an ECG: signs of left ventricular hypertrophy;

- on the PCG: above the apex of the heart, a decrease in the amplitude of oscillations of the I tone; above the aorta, a decrease in the amplitude of oscillations of the II tone, a decreasing protodiastolic noise.
- on the radiograph of the heart: in the direct projection, elongation and bulging of the 4 arches of the left contour of the heart, the aortic configuration of the heart, bulging of the upper arches of the right and left contours of the heart, low level of the right atriavasal angle; in the left oblique projection, bulging posteriorly of the left ventricle.

In patients with aortic stenosis:

- pulse: slow or sloping (pulsus tardus), soft, low filling (pulsus mollis), small or low (pulsus parvus seu humilis) pulse; rare (less than 65 beats per 1 min) (pulsus rarus), slow;
- blood pressure: systolic is reduced to 90-100 mmHg, diastolic blood pressure is normal, but may be slightly elevated, pulse pressure is low;
- on an ECG: signs of left ventricular hypertrophy;
- on the PCG: above the apex of the heart, a decrease in the amplitude of oscillations of the I tone; above the aorta, a decrease in the amplitude of oscillations of the II tone, an increasing-decreasing (diamond-shaped) systolic noise;
- on the chest X-ray: in the direct projection, the elongation and bulging of the 4 arches of the left contour of the heart, the aortic configuration of the heart, the bulging of the upper arches of the right and left contours of the heart, the low level of the right atriavasal angle; in the left oblique projection, the bulging posteriorly of the left ventricle.

Drug therapy usually includes drugs of the following groups: antihypertensive agents; diuretics; antiarrhythmics; cardiac glycosides; cardiometabolics, cardioprotectors; anticoagulants, antiplatelet agents; antibiotics; with the autoimmune nature of pathology – glucocorticoids and cytostatics. The type of surgical treatment depends on the type and severity of the heart defect in stenosis – commissurotomy (separation of fused or scarred valve flaps, expansion of the opening between the heart sections, allowing to improve hemodynamics); in case of insufficiency – prosthetics or plastic surgery of the existing valve; in case of combined defects – replacement of the affected valve with artificial, sometimes with commissurotomy; in case of combined defects – simultaneous prosthetics of valves. Modern heart surgeries are, as a rule, minimally invasive interventions – they are carried out through a catheter inserted into the vascular bed into the heart. This improves the tolerability of operations by patients, minimizes the risk of complications, and shortens the recovery period.

To reduce the risk of developing acquired heart defects, timely treatment of infectious diseases will help to prevent the spread of infection to the heart or the chronization of pathology; adequate treatment of autoimmune diseases and metabolic pathology, achieving their stable remission; rational, balanced nutrition; minimizing stress; adequate sleep; active lifestyle, daily physical activity in the amount of at least walking; giving up bad habits (smoking, drinking alcohol, taking drugs).

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ASSESSMENT OF ANTHROPOMETRIC CHANGES IN DIFFERENT THYROID GLAND DISEASES

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Abstract. *In this article, the authors conducted a retrospective analysis of the worldwide studies of changes in anthropometric indicators and changes in thyroid hormone levels in thyroid disease.*

Keywords: *weight, body mass index, anti-thyroid peroxidase (anti-TPO), vascular endothelial growth factor-1.*

Significance: Recently, several authors have pointed out that the number of endocrine gland diseases is increasing as a result of the deterioration of the environment in the world. Also, due to the increasing number of secondary diseases related to the thyroid gland in the population of regions with a deficiency of iodine, this topic remains open.

Purpose: To study the impact of thyroid disease on changes in anthropometric indicators in the world.

Materials and methods: In this topic, the results of articles, abstracts, dissertations were taken from pubmed, web of science and google scholar databases, and a retrospective analysis was conducted on these scientific researches.

The results of the study: Behrang Motamed and his colleagues conducted scientific observations in four stages. This observation began in 1999 and ended in 2011. 971 women and 784 men participated in the observations. In the 9.7-year follow-up, it was observed that the free T4 level decreased with the patient's weight and waist-to-hip ratio. In addition, it was found that the amount of thyroid-stimulating hormone has an effect on the waist circumference, and with the change of the free T4 hormone level over time. found that there is a negative correlation between body weight.[5]

In a study of women living in the southern region of Surya, Dareen A.A and co-authors studied the relationship between anthropometry of obese women and the size of the thyroid gland. This study was carried out between 2017 and 2018 and included a total of 140 women over the age of 35 years old or recently. Obese women who had no complaints related to the thyroid gland participated. During the study, women were divided into 3 groups according to the degree of obesity, body surface area, waist and hip circumference, waist-to-hip ratio were determined, and the morphology of the thyroid gland was determined It was determined by ultrasound examination. In the research, it was found that the size of the thyroid gland was determined in women of the third degree of obesity.[10]

In China, from March to October 2010, Weimin Hu and co-authors studied the correlation of thyroid nodules with anthropometric indicators. A total of 6793 adults and 2410 children in Hangzhou, Zhejiang Province, China, were conducted based on ultrasound examination of the thyroid gland. Socio-demographic thyroid gland characteristics and potential risk factors were collected in a questionnaire. Height and weight were measured using standard protocols. This

study found that weight, height, BMI, and BSA were positively associated with thyroid nodules in women and girls. Taller, obese individuals show an increased susceptibility to thyroid nodules.[11]

Silvia Turcios and co-authors conducted a study among a total of 100 healthy people aged 18-50, including 21 men and 79 women, living in Cuban conditions without iodine deficiency. Authors were measured and correlated with several anthropometric data and various factors leading to thyroid cancer. In multivariate analysis, thyroid volume was associated with all anthropometric measurements, but in multivariate analysis, body surface area was found to be the only significant anthropometric parameter. Research has shown that body surface area measurements of thyroid size can be used to clinically estimate thyroid size and that thyroid size is inconsistent among tobacco users.[12]

This study was conducted by Nidhi Budhalakoti and Kalpana Kulshrestha on 150 randomly selected female subjects aged 21 to 50 years in Pantnagar area of Udham Singh Nagar district, Uttarakhand. Basic anthropometric measurements such as weight, height, waist and hip circumference measurements of all participants were taken, blood samples were taken from those suspected of hypothyroidism, and thyroid hormones were analyzed. People with high weight, waist and hip circumference, increased need for sleep, constipation, weak muscle tone (muscular hypotonia), impaired cognitive function (brain fog) and restlessness, depression, etc. In conclusion blood content analysis should include biochemical testing for thyroid function.[13]

M. Dvořáková and other authors studied the relationship between hypothalamus-thyroid hormones and anthropometric indicators in the Czech population. The participants included patients with thyroid diseases and obesity. Among them, 1012 includes male and 1625 female patients. The amount of thyroid stimulating hormone, free T3 and free T4 was determined in the blood of the patients. Also, anthropometric indicators such as age, body weight, body size, body mass index, hip circumference, neck circumference, wrist circumference and several other measurements were taken. As a result, it was found that thyroid stimulating hormone, free T3, free T4, T3 and T4 ratio in men were negatively related to age, in women only The ratio of T3 to T4 was found to be negatively correlated with age.[14]

In Wuhan, China, Ranran Hu and researchers aimed to assess how thyroid function is linked to underweight, overweight, or obesity, and metabolic risk markers in adults. : A total of 16,975 subjects, aged 18–80 years, who attended the Health Management Center of Tongji Hospital, Wuhan, China were enrolled in this study. Anthropometric and laboratory data were collected and analyzed. Serum free triiodothyronine (fT3) and fT3/free thyroxine (fT4) ratio (fT3/fT4) were positively associated with body mass index (BMI) ($P < 0.001$), while there was a negative relationship between fT4 and BMI ($P < 0.001$) according to multivariable regression analysis adjusted for age and sex. Associations between thyroid hormone concentrations and markers of blood pressure, and lipid and glucose metabolism were identified after adjustment for age, sex, and BMI, with TSH being negatively associated with fasting blood glucose (FBG). fT3 was positively associated with systolic blood pressure and low-density lipoprotein-cholesterol, while fT4 was positively associated with diastolic blood pressure, FBG, and high-density lipoprotein-cholesterol (HDL-C), and negatively associated with hemoglobin A1c (HbA1c) and triglyceride. Finally, fT3/fT4 was positively associated with HbA1c and triglyceride, and negatively associated with HDL-C. In conclusions overweight or obese participants had a high serum concentration of fT3, high fT3/fT4 ratio, and a low concentration of fT4. Underweight participants had high concentrations of fT4 and low concentrations of fT3. Thus, relationships

between thyroid hormones and metabolic risk markers were identified which suggest that thyroid function might be one factor that influences body weight and the co-morbidities of obesity.[1]

In this study Mahdiah Abbasalizad Farhangi and other authors are The aimed of the current study was to evaluate the effects of *Nigella sativa* on thyroid function, serum Vascular Endothelial Growth Factor (VEGF) – 1, Nesfatin-1 and anthropometric features in patients with Hashimoto's thyroiditis. Forty patients with Hashimoto's thyroiditis, aged between 22 and 50 years old, participated in the trial and were randomly allocated into two groups of intervention and control receiving powdered *Nigella sativa* or placebo daily for 8 weeks. Changes in anthropometric variables, dietary intakes, thyroid status, serum VEGF and Nesfatin-1 concentrations after 8 weeks were measured. Treatment with *Nigella sativa* significantly reduced body weight and body mass index (BMI). Serum concentrations of thyroid stimulating hormone (TSH) and anti-thyroid peroxidase (anti-TPO) antibodies decreased while serum T3 concentrations increased in *Nigella sativa*-treated group after 8 weeks. There was a significant reduction in serum VEGF concentrations in intervention group. None of these changes had been observed in placebo treated group. In stepwise multiple regression model, changes in waist to hip ratio (WHR) and thyroid hormones were significant predictors of changes in serum VEGF and Nesfatin-1 values in *Nigella sativa* treated group ($P < 0.05$). In conclusions dates showed a potent beneficial effect of powdered *Nigella sativa* in improving thyroid status and anthropometric variables in patients with Hashimoto's thyroiditis. Moreover, *Nigella sativa* significantly reduced serum VEGF concentrations in these patients. Considering observed health- promoting effect of this medicinal plant

in ameliorating the disease severity, it can be regarded as a useful therapeutic approach in management of

Hashimoto's thyroiditis.[1]

Parathyroid glands play an important role in controlling calcium levels, which influence muscular contraction and neurotransmission. The number of variants, localization and ectopic positions make these glands tricky during surgical exploration. Detailed anatomical knowledge of these glands is fundamental to avoid postsurgical hypoparathyroidism, such as failures during thyroidectomy and parathyroid procedures In 2011, Flavio Hojaij and other authors were to study and report practical knowledge for surgeons in order to localize the glands. Dissections were performed on 56 cadavers. Gland identity was confirmed by histological study. Also, mediastinal tissue and the carotid sheath were treated with Carnoy's solution to identify ectopic glands. The thyroid gland was divided and sliced to identify parathyroid glands in the parenchymal and subcapsular space. Four or more parathyroid glands were found in 89.3% of the studied specimens. Mean gland weight was 33.1 mg, and its mean measurements were 6.7 9 3.9 9 2.0 mm. In more than 90% of the cases there was a correlation with the inferior laryngeal nerve and the parathyroid glands: the upper glands were located in medial positions, and the lower ones were found to be located laterally. In 42.8% of cases at least one ectopic gland was observed. The main ectopic regions were the mediastinum and thymus (19.6%), thyroid subcapsular space (12.5%) and thyroid parenchyma (5.4%). Quantity, gland characteristics and location were not influenced by anthropometric and demographic parameters. Here we show the high incidence of parathyroid glands positioned at "abnormal" locations, and as a controversial topic in endocrine surgery, this matter must be continuously studied and reported in the literature.[2]

Lucas Schwingshackl and other authors aimed to perform a systematic review and meta-analysis of prospective cohort studies on fruit and vegetable consumption in relation to changes in anthropometric measures. Seventeen cohort studies (from 20 reports) including 563,277 participants met our inclusion criteria. Higher intake of fruits was inversely associated with weight change (decrease) (beta-coefficient per 100-g increment, -13.68 g/year; 95% CI, -22.97 to -4.40). No significant changes could be observed for combined fruit and vegetable consumption or vegetable consumption. Increased intake of fruits was inversely associated with changes (decrease) in waist circumference (beta: -0.04 cm/year; 95% CI, -0.05 to -0.02). Comparing the highest combined fruit & vegetable, fruit, and vegetable intake categories were associated with a 9%, 17%, and 17% reduced risk of adiposity (odds ratio [OR]: 0.91, 95% CI, 0.84 to 0.99), (OR: 0.83, 95% CI, 0.71 to 0.99), and (OR: 0.83, 95% CI, 0.70 to 0.99), respectively. This meta-analysis showed several inverse associations between fruit and vegetable intake and prospective improvements in anthropometric parameters, and risk of adiposity. The present meta-analysis seems to be limited by low study quality. Nevertheless, when combined with evolutionary nutrition and epidemiological modeling studies, these findings have public health relevance and support all initiatives to increase fruit and vegetable intake.[3]

Fabiane Aparecida Canaan Rezende and co-authors compared indicators and indices anthropometrics of the elderly by gender and age group. Cross-sectional study was undertaken using a representative probability sample, involving 621 elderly. We evaluated the weight, height, circumferences (waist, hip, calf and arm); body mass index, body adiposity index, waist-hip ratio and waist-stature ratio. In result, women were found to have a higher mean body mass index, waist-stature ratio, body adiposity index and arm circumference (p<0.05). Weight, and calf and arm circumferences were observed to be lower in the older age groups (p<0.05). In conclusion the total and peripheral body mass, for the men, in particular, was lower among the older subjects. Central adiposity did not differ among the age groups in both the genders.[4]

By Behrang Motamed and other authors uncertainties exist regarding the causal relationship between thyroid function tests (TFT) within the euthyroid range and anthropometric measures. This longitudinal cohort is aimed to examine the relationship between the two conditions. Euthyroid participants of Tehran Thyroid Study (TTS) attending phase I (1999–2001) were included in this study and were followed up to phase IV (2008–2011). TSH and free T4 (fT4) levels as well as weight (Wt), waist circumference (WC), hip circumference (HC) and waist-to-hip ratio (WHR) were measured at both phases. Results: 971 women and 784 men were included in the analysis. During 9.7 years of follow-up, increases in TSH levels, Wt and WHR as well as a decrease in fT4 level were observed. Multivariable regression analysis showed a significant relationship between TSH changes and alterations in WC in women ($\beta = 0.69$, $P = 0.021$) and men ($\beta = 0.61$, $P = 0.038$). Moreover, a significant negative association of Δ fT4 with changes in weight was documented ($\beta = -0.49$, $P = 0.001$ in women and $\beta = -0.56$, $P < 0.001$ in men). Additionally, we found a negative relationship between Δ fT4 and Δ HC in men ($\beta = -0.36$, $P = 0.001$). Conclusion: In both genders, there was a positive relationship between changes in TSH and waist circumference and conversely a negative association of changes of fT4 levels with weight over time.[5]

Getachew Wassihun Dessalew, Dawit Habte Woldeyes and Belta Asnakew Abegaz aimed at documenting the anthropometric parameters of 10,000 meter runners and to find out the association between such parameters and performances. Methods: A descriptive field study was

conducted. 32 elite 10,000 meter runners participated. The data were collected while the athletics team was preparing for the world athletics championship. The experience of male and female athletes showed a negative association with finishing time. However, there was no statistically significant correlation between the age and running time in both sexes. A significant positive association of body weight to running time was observed in both sexes. Body height correlates positively to running time in males but not in females. The length of the arm, the forearm, the leg in both sexes and length of the thigh in women had no significant association with finishing time. A smaller arm and calf circumferences have a positive effect on the performance of both sexes. Smaller thigh circumference showed a positive association with the performance of men. In conclusion the age of the runners did not correlate with their performance. The anthropometric variables displayed significantly higher values in men than in women. Experienced athletes performed better in both sexes. Anthropometric parameters may be useful for selection, prediction, improving running performance besides for preventing injuries and health risk assessment.[6]

Saeed Ilbeigi; and other authors were to investigate the relationship between some of anthropometric variables and basic motor abilities in primary school boys aged 9 -11 years of Birjand. The population was 650 boys' students in fourth and fifth grade in birjand city, those 129 students (9-11 years old) randomly were selected as sample group. Anthropometric measurements such as: height, weight, sitting height, shoulder width, knee height, Q angle, hand length, thigh length, foot length, heel width, the width of the front foot, thigh circumference, arms circumference, legs circumference, arms circumference were measured. Moreover, the basic motor abilities tests, including balance test, jumping test, agility test and flexibility was done. The statistical analysis was done, using the Pearson correlation coefficients between anthropometric indices and basic motor skills. The results showed significant relationship between jumping and thigh and shank girths ($p \leq 0.05$). Moreover, the same results were found between balance test and shank girth, weight and heel width. The results also indicated the significant negative correlation between agility and height, weight, knee height, thigh height, and foot height. Generally the results suggested that the some parameters can be considered as important factor for talent selection between children and adolescent.[7]

In Taiwanese, N-F Chu, EB Rimm, D-J Wang, H-S Liou and S-M Shieh were evaluated the association between anthropometric parameters and lipid levels among Taiwanese school children. They were used a probability-proportional-to size sampling and multi-stages sampling procedure, we sampled 1500 school children from 10 schools in Taipei city. Anthropometric parameters including body weight, body height, waist circumference, hip circumference and skinfolds were measured. Serum total cholesterol (CHOL), triglycerides (TG), high density lipoprotein-cholesterol (HDL-C), apolipoprotein A1 and B (ApoA1 and ApoB) were measured by standard methods, low density lipoprotein-cholesterol (LDL-C) and CHOL=HDL-C ratio were calculated by formula. In analyses 1366 children (681 boys and 685 girls) are participated. The boys had higher body height ($P < 0.001$) and larger body weight ($P < 0.05$), waist circumference ($P < 0.01$) and waist=hip ratio (WHR, $P < 0.001$) than the girls. However, the girls had larger skinfolds than the boys. After adjusting for age, girls had higher total CHOL, TG, HDL-C, LDL-C, ApoA1 and ApoB concentrations than boys. In general, TG was positively associated with most anthropometric parameters (except body height); a similar negative association between HDL-C and anthropometric variables was noted. After controlling, for age, cigarette smoking, alcohol drinking and puberty development, shorter body height was the strongest predictor of total CHOL,

LDL-C and ApoB concentrations among boys. From this large study of school-age children from Taiwan, we found anthropometric parameters, such as body height, BMI or WHR, are adequate predictors of blood lipid levels; however, skinfold measurements are generally more strongly associated with lipid levels in both genders.[8]

Two hundred and fifty healthy schoolchildren over 6 years of age, 12 years old (male: 9.3 ± 2 ; female: 9.4 ± 1.9) participated in this study. Their lung function, such as forced expiratory volume in 1 second (FEV1), forced vital capacity (FVC), and peak expiratory flow rate (PEF), was assessed using a micro-computerized spirometer. In addition, anthropometric variables including height, weight, chest circumference, waist circumference, and hip circumference were measured. Anthropometric variables are strong determinants of lung function in children. In addition, higher BMI had a positive effect on FEV1 and FVC values.[9]

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CRITERIA FOR ASSESSING FORENSIC MORTALITY IN CHILDREN WITH TYPE 1 DIABETES MELLITUS

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Abstract. *The methods of postmortal diagnosis of diabetes mellitus are offered to put into forensic medical practice, that allow, at the result of complex cadaver's examination (analysis of the most informative signs, being typical for this pathology), and, biochemical studies (analysis of glycemic hemoglobin, creatinine, urea), samples of cadaver's blood, to make a conclusion on presence diabetes mellitus as the main cause of death, or, associated disease.*

Keywords: *posthumous diagnosis of diabetes, hemoglobin, creatinine, urea.*

Relevance

In recent years, there has been a sharp increase in the incidence of diabetes mellitus (DM) worldwide. At the same time, the number of DM patients doubles every 10-15 years. According to the data of the Ministry of Health of the Republic of Uzbekistan, diseases of the cardiovascular system in combination with diabetes occupy a leading place in the structure of mortality.

Diabetes mellitus leads to early disability and mortality, which are primarily caused by macro- and microangiopathic complications: atherosclerosis and coronary heart disease, nephropathy, retinopathy, neuropathy and osteofibropathy [1, 2, 6, 9]. Diabetic angiopathies are the most common cause of death – up to 80% of patients with DM [4, 8].

It should be noted that in these cases, sudden death is most often noted, in which the corpse is subject to mandatory forensic medical examination, primarily to exclude violent death.

At the same time, DM in a postmortem diagnosis (as the main or concomitant pathology) is extremely rare. Apparently, this is due to the fact that the pathomorphological diagnosis of diabetes as the main cause of death is associated with a number of difficulties, namely:

- underestimation of DM as the main cause of death by forensic experts;
- the absence of medical documents from forensic experts about the lifetime state of health of the deceased (outpatient card, medical history, etc.);
- the absence of pathomorphological signs specific to DM;
- the lack of a methodology for examining corpses in cases of sudden death, which makes it possible to detect the presence of diabetes mellitus with great reliability.

A significant difference between morbidity rates, data on mortality from complications of diabetes and the frequency of occurrence of a postmortem diagnosis of diabetes mellitus in the forensic medical examination of corpses indicates the presence of many unresolved issues of postmortem morphological diagnosis of diabetes, including as the main cause of sudden death.

Currently, in forensic medical practice, the diagnosis of "Diabetes mellitus" is made on the basis of a number of available morphological signs and the results of additional studies. The signs of DM described in textbooks on pathological anatomy are not detected in all cases in real expert practice, besides they do not have pathognomoncity.

There are a number of papers that contain recommendations for the diagnosis of DM by biochemical parameters of cadaveric blood [3, 5, 7], but they also need to be evaluated only in a

complex. At the same time, the concentration of glucose in the blood is considered as the main indicator.

The developed method for determining glycated hemoglobin in samples of liquid cadaveric blood and in its samples from a dry spot [5, 9] has not been widely used in forensic medical practice.

It should also be noted that in order to identify biochemical blood parameters, it is necessary to send cadaveric blood samples for additional biochemical studies. However, this happens extremely rarely (only with commission examinations), because forensic medical examinations are not focused on the detection of DM and, in the absence of a biochemical laboratory as part of the bureau of forensic medical examination.

Thus, making a forensic diagnosis of "Diabetes mellitus" or "Diabetic coma" presents significant difficulties. This, in our opinion, is due to the fact that to date there are no clear and specific scientifically based recommendations for establishing a post-mortem diagnosis of diabetes mellitus.

The purpose of the study. Development of scientifically based recommendations and algorithm for post-mortem diagnosis of diabetes mellitus in forensic medical practice.

Materials and methods of research

The material for our research were:

- blood samples taken from the corpses of persons who died a violent and non-violent death (45 cases);
- archival materials (acts of forensic medical examination of corpses; 51 cases in total);
- corpses of persons who died suddenly (38 cases).

Biochemical studies (mainly on the content of glucated hemoglobin) were checked at the Department of Biochemistry of the Tashkent Pediatric Medical Institute.

When analyzing the "Expert Conclusions" and "Acts of forensic medical examination of a corpse" in the RNPTSME, we took into account more than 88 signs, which can be divided into the following groups:

1. General signs – age, gender, prescription of death, brief circumstances of death.
2. External signs – appearance, body weight and size, skin color, cadaveric phenomena.
3. Internal signs – macroscopic and microscopic (results of forensic histological examination).
4. Forensic medical diagnosis and expert conclusions.

In all cases, there were more men (72.8%) than women.

For biochemical studies, cadaveric blood samples were taken from the corpses of persons who died within 24 hours.

Morphological and biochemical parameters were systematized and compiled into a single table by the coding method.

The following research methods were used in the work:

- photometric determination of the relative content of glycated hemoglobin (HbA1c) in cadaveric blood;
- determination of the amount of blood glucose by enzymatic glucose-peroxidant method;
- determination of creatinine by the Popper method;
- determination of urea concentration by diacetyl monooxime method;
- morphometric method;

- methods of statistical analysis (discriminant analysis).

The results of the study and their discussion

All selected cadaveric blood samples were examined for the content of glycated hemoglobin. The content of glycated hemoglobin in 48.2% of cases exceeded the norm.

When analyzing archival material, it was revealed that in 86.3% of the total sample, DM was not diagnosed during a forensic medical examination, of which, in 42.6%, DM was not diagnosed during life (data were not available in medical documents).

Our observations of the level of glycated hemoglobin were distributed as follows (Table 1).

The concentration of glycated hemoglobin over 12% indicates decompensation of DM, clinically manifested by hyperglycemic coma. As the causes of death, "Hyperglycemic coma, diabetes mellitus" in our observations occurred in one case when this diagnosis as a concomitant was indicated in the medical history.

Table 1.

Distribution by level of glycated hemoglobin in cadaveric blood samples

Уровень HbA1c	Compensation stage	Number of cases (in %)
5,5-7,9%	Well compensated	41
8-9,9%	Sufficiently compensated	28
10-11,9	Partially compensated	21
12% и более	Decompensation	11

Next, we determined the levels of glucose, urea and creatinine in cadaveric blood samples from the obtained sample (with an increased level of diabetes mellitus). At the same time, the following spread of data presented in Table 2 was obtained.

Table 2

Concentrations of biochemical parameters in cadaveric blood samples

Concentration	Glucose	Urea	Creatine
Lowered	25	11	22
Norm	17	86	52
Increased	138	82	106
Was not carried out	0	1	0

In 73.4% of cases, increased levels of urea and creatinine were observed, which indicates nephrotoxic syndrome, which itself is a complication of diabetes and can contribute to the onset of death.

An increase in creatinine concentration against the background of the maximum concentration of urea is a sign of renal insufficiency.

All archival material was evaluated according to signs, of which there were more than 100, but in the process of primary statistical processing, 30 of the most informative morphological signs were identified – the most essential for the study of diabetes mellitus (Table 3).

To verify the correctness of the conclusions, we introduced a control group (those who died a violent death with the level of glycated hemoglobin within the normal range).

Table 3.

Morphological features characteristic of DM and their encoding variants

Sign	Evaluation options	Encoding
1	2	3

Food	sharply lowered	0
	lowered	1
	somewhat lowered	2
	satisfactory	3
	slightly elevated	4
	elevated	5
Vessels of the brain	sharply elevated	6
	thin, elastic,	1
	thickened, dense, convoluted	2 3
Thickness of subcutaneous adipose tissue at the navel level	value in centimeters	
Heart Size	reduced	0
	norm	1
	increased	2
Heart mass	reduced	0
	norm	1
	increased	2
The severity of fat deposits under the endocardium	small	1
	moderate	2
	abundant	3
	excessive	4
Myocardial density	dense	1
	somehow dense	2
	flabby	3
	somehow flabby	4
The color of the myocardium on the incision	encoded by the spectrum	
Focal myocardial changes	No	0
	Yes	1
Small - focal myocardial changes	No	0
	Yes	1
Uneven blood filling of the myocardium	No	0
	Yes	1
Wall thickness of the left ventricle	value in centimeters	
Wall thickness of the right ventricle	value in centimeters	
1	2	3
The presence of atherosclerotic changes in the coronary vessels (narrowing of the vessel lumen)	no	0
	up to 30%	1
	up to 50%	2
	up to 75%	3
	up to 90%	4

The presence of atherosclerotic changes in the aorta	No Yes	0 1
Liver Size	Normal increased	1 2
Liver mass	normal increased	1 2
The edge of the liver	rounded pointed	1 2
Liver color on the incision	encoded by the spectrum	
The presence of pathological changes in liver tissue	no	0
	nodes	1
	areas of yellowish color	2
	yellowish tint	3
	small whitish inclusions	4
	flabbiness of parenchyma	5
	greasy appearance	6
	nutmeg liver	7
	blurring of the pattern	8
mottled appearance	9	
Length of the pancreas	the norm reduced	1 2
Width of the pancreas	the norm less	1 2
Thickness of the pancreas	the norm reduced	1 2
Gland density	flabby	0
	somehow flabby	1
	elastic (tightly elastic)	2
	unevenly	3
	compacted compacted dense	4
	sharply compacted	5
The color of the gland on the incision	encoded by the spectrum	
The structure of the gland on the incision	the lobulation is smoothed	0
	fine-lobed lobed (medium-lobed)	1
	large-lobed	2
1	2	3
The presence of pathological changes in the gland	no	0
	whitish layers	1
	areas of adipose tissue in the stroma	2
	greasy shine	3
	abundantly overlaid with fat	4

	calcinates	5
	swelling capsules	6
	cysts	7
The presence of hemorrhages in the gland	no	0
	vessels are dilated,	1
	hemorrhages are full-blooded	2

Next, we carried out statistical processing of the data obtained with the derivation of the discriminant function. This function allows you to assign each new case under study to one of 2 groups - observations with DM and a control group.

Thus, using this function, we were more likely to establish a postmortem diagnosis of DM by biochemical and pathomorphological changes.

The most significant signs identified during the sectional study were the following:

- degree of fatness;
- severe atherosclerosis of the cerebral vessels;
- increase in the mass and size of the heart;
- macroscopic signs of cardiomyopathy (color and uneven blood filling of the myocardium, the presence of small-focal cardiosclerosis);
- pronounced atherosclerotic changes of the coronary vessels and aorta (II-IV degrees);
- color (presence of brown and yellowish shades) and pathological changes in liver tissue (nodes, inclusions, flabbiness of parenchyma, muscat liver);
- pathological changes in pancreatic tissue (whitish layers, areas of adipose tissue in the stroma, calcinates, cysts).

A formula has been developed that allows, according to a set of macroscopic signs, to establish the presence of DM in each case with a probability of more than 80%. This probability is statistically significant for medicine in general and forensic medicine in particular. We believe that such a statistical calculation can serve as a tool for forensic medical experts in the post-mortem diagnosis of diabetes mellitus.

For the final verification of the diagnosis of "Diabetes mellitus" or "Diabetic coma" and determining its degree of compensation, it is necessary to conduct biochemical studies of cadaveric blood samples for the concentration of glycated hemoglobin. To identify complications of the disease (primarily renal failure), it is necessary to conduct a biochemical study of cadaveric blood for creatinine and urea.

Conclusions:

1. The frequency of occurrence of elevated levels of glycated hemoglobin in cadaveric blood samples is quite high, which indicates a large proportion of undiagnosed diabetes mellitus during life.
2. Analysis of archival material of forensic medical reports revealed that the diagnosis of "Diabetes mellitus" or "Hyperglycemic coma" as the main cause of death was not exposed when making a forensic medical diagnosis.
3. The most informative pathomorphological signs characteristic of diabetes mellitus have been identified, which can serve as the main tool for complex postmortem diagnosis.
4. An increased level of glycated hemoglobin is a reliable biochemical criterion for postmortem diagnosis of diabetes mellitus.

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EVALUATION AND ANALYSIS OF THE INVOLVEMENT OF A FIBRINOLYSIS INHIBITOR OF THE COAGULATION SYSTEM IN THE PROGRESSION OF CORONARY HEART DISEASE CHD

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Abstract. *Thrombin-activated Fibrinolysis inhibitor (TAFI), participates in the regulation of the balance between coagulation and fibrinolysis. High plasma levels of TAFI may therefore contribute to a hyperfibrinolytic condition and an increased risk of thrombotic disorders. Coronary stenosis is a consequence of the progression of atherosclerotic plaques, which is associated with a violation of fibrinolysis. Thrombin-activated fibrinolysis inhibitor (TAFI) and plasminogen activator 1 inhibitor (PAI-1) are fibrinolysis inhibitors whose levels depend on acquired conditions and polymorphisms. Therefore, our study is aimed at studying the association of TAFI gene polymorphism with the severity of coronary stenosis in patients with stable coronary artery disease (CAD).*

The methods that have recently appeared for determining alleles of polymorphic genetic markers using polymerase chain reaction will allow us to assess the genetic risk of developing cardiovascular pathology especially for the purpose of primary prevention of coronary heart disease, as well as to improve new approaches to individualization of therapy as a secondary prevention of the disease.

Keywords: *cardiovascular disease, ischemic heart disease, risk factors for the development of cardiovascular disease, myocardial infarction, t-PA - tissue plasminogen activator; TAFI, thrombin-activated fibrinolytic inhibitor; TAFIa is a thrombin-activated fibrinolytic inhibitor.*

Relevance. Cardiovascular diseases (CVD), in particular coronary heart disease (CHD), are still the leading causes of death and disability in many countries of the world [1,7]. Non-communicable diseases such as cancer, cardiovascular disease, diabetes and chronic respiratory disease are closely associated with risk factors such as tobacco and alcohol use, unhealthy diets and physical inactivity. Approximately 79% of all deaths in Uzbekistan are due to non-communicable diseases, and diseases of the cardiovascular system remain the main cause of premature death. [8,3]. The analysis shows that 53 percent of deaths among the population aged 30-70 years are associated with cardiovascular studied diseases. The number of cardiovascular diseases in Uzbekistan has increased by 20% over 5 years. They account for more than 50% of deaths [9]. For the first time, the distribution of frequencies of alleles and genotypes of the thrombin-activated fibrinolysis inhibitor TAFI gene was studied, and the relationship between the prevailing risk factors for coronary artery disease and molecular genetic changes in blood coagulation factors was for the first time, the combination of the TAFI gene with traditional risk factors (RF) was evaluated, and its contribution to the total risk of CHD was revealed. It is known that disorders of the hemostasis system, leading to increased intravascular coagulation and thrombosis, are one of the most important links in pathogenesis CHD. In thrombosis, the balance

between hemocoagulation factors and the fibrinolysis system plays a leading role. Polymorphism of genes encoding factors of this system also plays a significant role in the processes of hemostasis. These genes can be considered as candidates for studying hereditary predisposition to CHD.

Identification of genetic factors and assessment of their contribution to the development of CVD are the main tasks of modern molecular cardiology. Polymorphisms in several hundred genes have been studied as genetic risk factors for atherosclerosis, arterial hypertension (AH), coronary heart disease (CHD), myocardial infarction (MI), stroke, thrombotic and other diseases.

The purpose of the study: To evaluate and analyze the association and role of thrombin-activated fibrinolysis inhibitor (TAFI) with risk factors and severity of CHD.

Material and methods. The object of the study were 87 persons who voluntarily signed up for inclusion in the study. The study was conducted by a prospective method in surgery of the Tashkent Medical Academy from 2020 to 2021. Statistical processing of income was obtained using Microsoft Excel spreadsheets and statistical software packages STATISTICA 6.0, SAS 6.3. An electronic database was opened using Excel Microsoft Office 2012. Statistical estimate of the value of income was obtained by the average estimate between the error on the t-Student's criterion.

Results and discussions. The study studied the associative relationship and role of thrombin-activated fibrinolysis inhibitor (TAFI) with risk factors and severity of coronary artery disease, since modern ideas about coagulation balance disorders are more informative in the development, course and prognosis of coronary heart disease. At the same time, the identification of genetic factors and the assessment of their contribution to the development of CVD are the main tasks of modern molecular cardiology. The main criteria for inclusion in the study was the presence of an established diagnosis in patients with coronary artery disease: Stable exertional angina (SEA) II-III FC. The functional class of SSN was established on the basis of the classification of angina pectoris of the Canadian Society of Cardiology (1976). The diagnosis of CHF was made on the basis of complaints (3 or more episodes of angina pectoris per week), clinical picture (attacks of anginal pain, lasting up to 15 minutes, stopped by taking nitroglycerin, occurring during physical activity when walking more than 500 m in FC II and within 100-200 m in FC III), history, physical examination, laboratory (lipid spectrum, coagulogram) and instrumental methods (VEM) in accordance with the recommendations of ESH / ESC (2019) [12, p. 425] and RCS/WHO (2017) [4], Patients with unstable angina in the second group were of comparable age and the diagnosis was made on the basis of the Braunwald classification. The study (2020-2021) included 87 individuals, of which 68 patients with coronary artery disease, both sexes, aged 48 to 76 years (average 61.9 ± 1.31) were included for further work. The group of healthy individuals consisted of 19 people aged 40 to 65 years (average 52.5 ± 1.67 years) who did not suffer from CVD. The patients were divided into 2 groups: group 1 - 35 patients with IHD and stable exertional angina FC 1-4; Group 2 - 33 patients with coronary heart disease, unstable angina pectoris, with risk factors for the underlying disease [1]. All patients underwent a genetic blood test for TAFI gene polymorphism. All 68 patients received antiplatelet therapy, after which the frequency of adverse events (cardiovascular death, recurrent MI, stroke, bleeding) was assessed. The results of the study were described as $M \pm SD$ (M is the arithmetic mean and SD is the standard deviation) or $M \pm m$ (m is the standard error of the mean). For a statistical description of the relationship between different parameters, the Spearman rank correlation coefficient was calculated. Odds ratios (OR) corresponding to 95% confidence interval (CI) were calculated based on logistic regression

models. The level of statistical significance was considered to be $p < 0.05$. Study of TAFI gene polymorphism, allele frequency and linkage disequilibrium between polymorphisms. For genotyping, out of 19 healthy and 68 patients with coronary artery disease (CVD and SP), 52 (60%) patients (out of 87 study respondents) with a pure Uzbek pedigree and who gave written informed consent were included. The clinical characteristics of 13 healthy individuals (68.4%) and 39 patients (57.4%) of IHD of Uzbek nationality were studied, taking into account significant risk factors. According to the data of clinical parameters of genotyped individuals, the association of non-modifiable and significant predominance of the most leading modifiable risk factors for coronary artery disease (CVD), such as TDS, was proved in 69% of patients with CVS and SP, as well as in 38.5% of healthy individuals. The presence of hereditary burden both in healthy and in patients with CVS and SP is pronounced, which amounted to 61.5% and 44%, respectively. Smoking is also expressed in both groups of respondents, i.e. 31 and 41%. Genomic DNA was isolated from peripheral blood leukocytes by the salting out method [4]. The sequenced region of the promoter was carried out according to the generally accepted method for determining human TAFI [2]. The division into 10 overlapping fragments approximately 300 bp in length was carried out.

Analysis of the TAFI gene polymorphism revealed significant heterogeneity in the frequencies of pathological and normal genotypes in patients with coronary artery disease and healthy individuals (Table 1; Fig. 1). Patients with Uzbek ancestry included with informed consent in the study suffered from the following leading risk factors: in the control group, this is hereditary burden -61.5%, the presence of TDS - 38.5%, and cigarette smoking with a high level of nicotine addiction - 31% . In the group of patients, CHF and NS turned out to be the leading risk factors for coronary artery disease: the presence of TDS - 69%, hereditary burden - 44%, and cigarette smoking with high nicotine dependence - in 41% of cases [10].

Table 1

Clinical characteristics of genotyped healthy persons and patients with CAD, taking into account significant risk factors

Indicators	Control group (n=13)		Patients with CAD: CVS and SP (n=39)		P
	aбс	%	aбс	%	
The presence of a hereditary burden	8	61,5	17	44	>0,05
smoking cigarettes	4	31	16	41	>0,05
The presence of a pronounced TDS	5	38,5	27	69	<0,01
Presence of obesity	1	7,7	11	28,2	<0,001
Age (average, years)	28,8±1,4		53,9±3,6		<0,001
Duration of CAD (in Wed per year)	0		4,81±0,7		<0,001
XC, mmol/l	156±9,8		201,7±14,3		<0,01

Further, the distribution of allele frequencies and their variations were studied. It turned out that the occurrence of pathological alleles was low. According to foreign scientists in their studies, the frequency of the minor allele varied from 0.24 to 0.49.

Table 2

The frequency of the main haplotypes of the TAFI gene in the entire sample and the 1st and 3rd tertiles of the distribution of TAFI Ag

		Haplotype					Frequency	
		2599	- 2345	- 438	aa147	+1542	+ 1583	Everybody
H1	r	2G	A	Ala	r	T	0,26	
H2	r	2G	r	Ala	C	T	0,16	
H3	C	2G	r	Ala	C	T	0,19	
H4	C	1G	r	Thr	C	A	0,21	

The 6 remaining polymorphisms generated 4 main haplotypes, which is more than 80% of all haplotypes observed in the entire sample. None of the other observed haplotypes had frequencies above 5%. Within the 4 major haplotypes, the -2345 2G/1G, Ala147Thr, and T+1583A polymorphisms were in full association. All polymorphisms were strongly associated with TAFI Ag levels ($P < 10^{-4}$). In all cases, the model was consistent with the additive effect of the allele on the log-transformed variable. Geometric means and 95% confidence intervals. The percentage of variation explained by genotypes varied from 48% for the C + 1542G polymorphism to 20% for the -2345 2G / 1G polymorphism, which practically coincides with the data of foreign scientists [2].

Table 3

Plasma TAFI levels (geometric mean, 95% CI) according to C+1542G and Ala147Thr genotypes

Genotype Ala147Thr	C + 1542G		
	CC	CG	GG
Ала / Ала	78,3	58,6	35,2
	(71,4–85,8)	(54,2–63,3)	(30.1-41.1)
	n = 23	n = 31	n = 8
Ала / Thr	98,5	68,7	
	(91,1-106,5)	(62,8–75,3)	-
	n = 31	n = 23	
Thr / Thr	114,4	89,1	
	n = 1	n = 1	-

Two patients carrying a combination of + 1542CC and 147Thr/Thr had a higher level of TAFI. However, it should be emphasized again that the effect of a single Ala147Thr polymorphism is indistinguishable from the effect of a haplotype combining the Ala147Thr, T+1583A, and -2345 2G/1G polymorphisms due to the strong association between the 3 polymorphisms. In the model assuming codominant effect of polymorphisms on log (TAFI): C+1542G effect $P < 10^{-4}$, Ala147Thr effect $P < 10^{-4}$, interaction $P = 0.77$ [5]. In our study, the occurrence of C + 1542G and Ala147Thr polymorphisms of TAFI levels in plasma was as follows (Table 4).

Table 4

Plasma TAFI levels according to C+1542G and Ala147Thr genotypes in patients with CVI and SP

Genotype Ala147Thr	C + 1542G		
	CC	CG	GG
Ала / Ала	78,3 (71,4–85,8) n = 2	58,6 (54,2–63,3) n = 1	35,2 (30.1-41.1) n = 3
Ала / Thr	98,5 (91,1-106,5) n = 1	68,7 (62,8–75,3) n = 2	-
Thr / Thr	114,4 n = 1	89,1 n = 1	-

Thus, due to the discovery of missing pathological alleles in the TAFI gene (only in 6 people), we had to cite the data of foreign scientists [5,3], where the occurrence of all studied alleles in them is low, which confirms the presence of a low risk of developing venous thrombosis in patients with coronary artery disease (CVD and NS). Probably, the obtained result of the study is associated with a small number of patients who gave informed consent to participate in the study. In this regard, a conclusion was made about the possible contribution to the development of coronary artery disease of the TAFI protein indicator as the main participant in the coagulation cascade [4]. So, in our study, the leading risk factors were identified and an assessment of the correlation interdependence of the studied indicators was presented (Fig.1.)

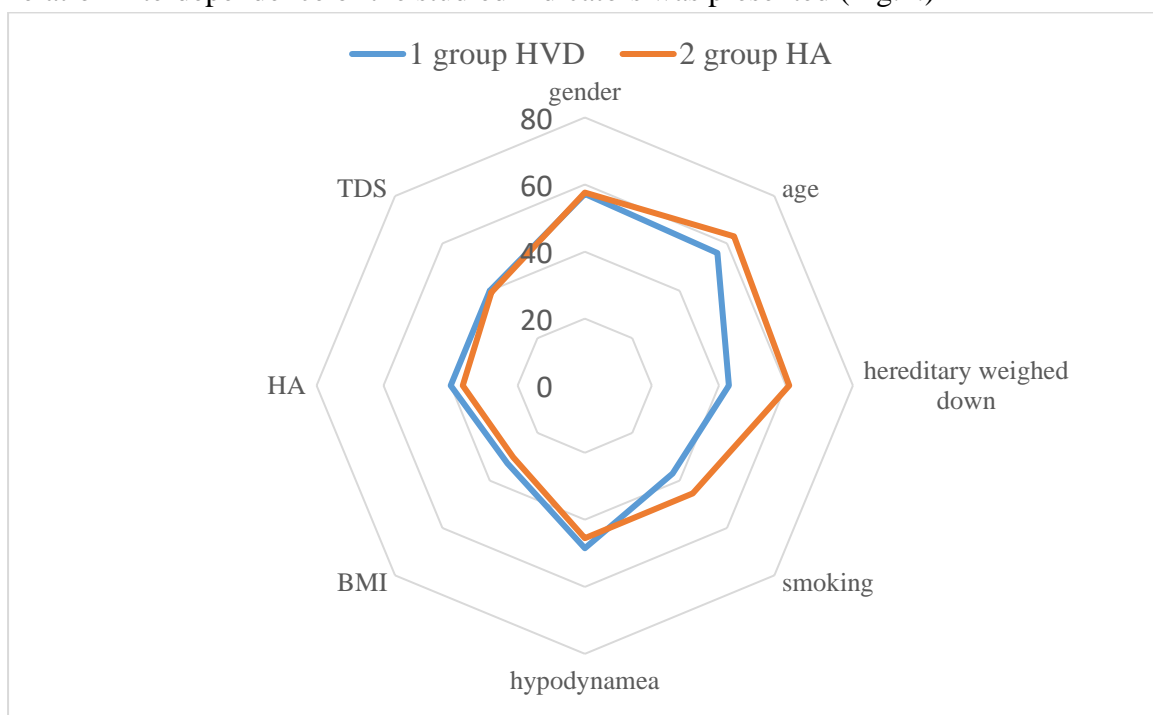


Figure 1. Leading risk factors and an assessment of the correlation of the studied indicators is presented

The study studied the state of coagulation hemostasis in patients with CHF and NS. In this regard, we have identified changes in coagulation hemostasis in patients of both groups and the control group. Since, in both groups, there were no distinguishable indicators for the components

of hemostasis, we decided to present the average values of changes in platelet hemostasis in patients with CHF and NS in both groups.

Table 5

Characteristics of platelet and coagulation hemostasis in study respondents

Indicators	Healthy, n=19	Pasients, n=68
platelets ($10^9/l$)	187±15,2	215±10,3*
Platelet aggregation	66±5,1	77±6,1±15,2
Start time VSK (min):	3 ³ ±0,1	3 ¹ ±0,1
the end:	4 ⁵ ±0,1	3 ⁶ ±0,1
PTI (%)	70,8±3,1	92,2±4,2
APTT **(сек.)	31,0±0,2	24,4±0,9
Fibrinogen (мг/л)	2,9±0,2	3,7±0,1
Hematocrit (%)	32,3±1,2	37,1±1,2
Thrombomodulin (IU)	36,5 ±0,4	59,2±2,3

According to some scientific studies, the degree of TAFI activation differs significantly between thrombin, plasmin and the thrombin/thrombomodulin complex, various experiments show that they all play a role in the physiological activation of TAFI. The results of the characteristics of platelet and coagulation hemostasis in the respondents of our study showed that the most significant significant difference was in terms of platelets by $28 \pm \dots 109/l$, there was a significant decrease in APTT by 6.6 sec. Thrombomodulin, which activates TAFI activation, was significantly higher in patients with CHF and NS than in the healthy group by 23 IU. The presented study determined the correlation between risk factors for coronary artery disease and its clinical and laboratory parameters, where it turned out that there is a direct strong correlation between almost all indicators, except for weak links with HChS and partly TDS (Figure 2).

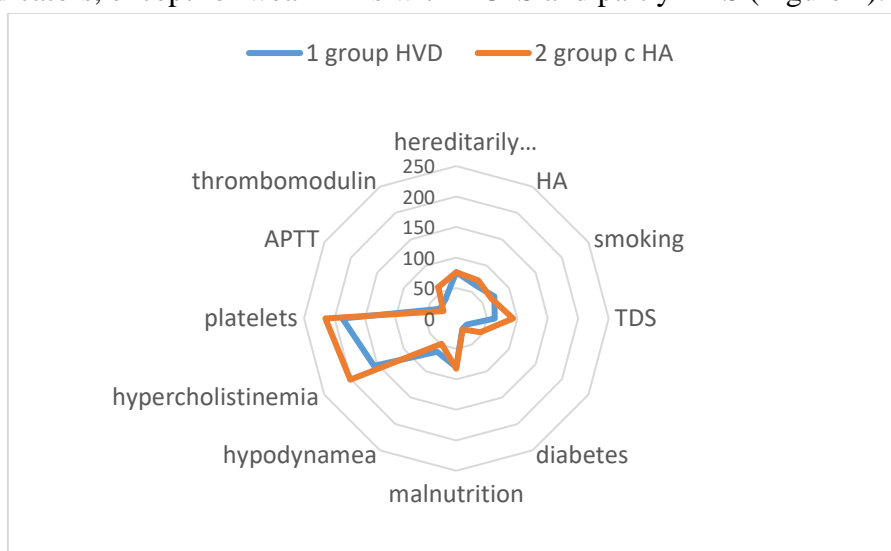


Figure 2. The presence of a correlation between risk factors for coronary artery disease and its clinical and laboratory parameters

The main problem in assessing the risk of developing CVD is the fragmentation and heterogeneity of markers used as risk factors. There is a large amount of literature data on individual genes involved in the pathogenesis of CHD. Phenotypic features that are taken into account by clinicians when predicting cardiovascular events are also described. However, a single approach that allows analyzing a relatively large number of polymorphic DNA markers in

combination with the most important phenotypic characteristics has not yet been developed, although this would significantly increase the effectiveness of assessing the individual risk of developing coronary artery disease [6]. Location in the same plane (according to Fig. 2), factors of coagulation hemostasis, as well as hereditary predisposition, hypertension and smoking indicate possible thrombotic events and the development of treatment tactics and preventive measures for patients with NS and CHF. According to the data of the basic therapy that our patients received, it turned out that in a larger percentage of cases, patients of group 1 received antiplatelet agents (91.4%), BABs (80%) and nitrates (43%). In the 2nd group of patients, patients with NS received the most antiplatelet agents (94%), BABs (91.0%) and nitrates (88%), as well as statins (91%).

Table 6

Information on basic therapy for patients of both groups

Drug group	1 group with SSN, n=35	2 group with NA, n=33
Nitrates	15 (43%)	29 (88%)
β-blockers	28 (80%)	30 (91%)
Ca antagonists	6 (17,1%)	8 (24,2%)
ACE inhibitor	7 (20%)	9 (27,3%)
ARA II	11 (31,4%)	12 (36,4%)
Antiplatelet agents	32 (91,4%)	31 (94%)

Quantitative characteristics of patients consuming drugs shows that patients in both groups take 2 to 4 drugs per day in accordance with clinical recommendations for the management of patients with coronary artery disease and hypertension, at individually indicated doses (Table 6). At the same time, the analysis of medication intake by patients of both groups showed that doctors comply with the standards of therapy, but the transition of patients from CHF to NA is possibly associated with the principles of taking medications (multicomponent therapy), adherence to therapy, the effect of risk factors on the clinical course of coronary artery disease, adherence to invasive methods of treatment and many other factors (in particular, polymorphism of the genes of patients with CHF, NS) [8]. To conduct high-quality drug therapy, the so-called pharmacogenetic therapy, it is necessary to take into account genetic polymorphism, in particular, in our work, excessive intake of antiplatelet agents without taking into account the fibrinolytic activity of TAFI will lead to undesirable outcomes and variability of previously prescribed therapy, an increase in the incidence of complications from taking antiplatelet agents and a decrease in adherence to therapy of our patients. Patients [9].

Conclusions

Low polymorphisms of the TAFI gene do not affect the incidence of fatal and non-fatal complications (cardiovascular death, recurrent MI, stroke) in patients with MI. The absence of pathological alleles in the TAFI gene (only in 6 people), which coincides with the data on occurrence with the data of foreign scientists, where they also have a low occurrence of all alleles studied, which confirms the low risk of venous thrombosis in patients with coronary artery disease (CVD and NS). According to the data of the basic therapy that the patients received, it turned out that in a larger percentage of cases, patients of group 1 received antiplatelet agents (91.4%), BABs (80%) and nitrates (43%). In group 2, patients with NS received the most antiplatelet agents (94%), BABs (91%) and nitrates (88%), as well as statins (91%). The purpose and part of the completed tasks of the study will lay the foundation for proving the contribution of the TAFI gene to the course and outcome of patients with coronary artery diseases: with stable and unstable angina pectoris. Identification of genetic markers of risk of heart attack and stroke is key to both risk

prediction and potential intervention to prevent future cardiovascular events; The low occurrence of TAFI gene polymorphism allows doctors to conduct inexpensive research methods in the form of a quantitative characteristic of the TAFI protein.

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MEDICINAL SANO (CASSIA) TOUR L., CLASSIFICATION OF PLANT, CULTIVATION AGROTECHNICS AND APPLICATION IN MEDICINE

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Abstract. Resolution of the president of the Republic of Uzbekistan dated April 10, 2020 "on additional measures for the development of folk medicine in the Republic of Uzbekistan" PP-4668" on measures to expand the scope of scientific research on the cultivation and processing of Medicinal Plants, the development of their seed production "dated November 26, 2020, PP-4901," protection of wild, based on the decisions of PP-4670 "on measures for processing and rational use of available resources", the Research Institute of genetic resources of plants, the Department of selection, seed and agrotechnics of medicinal plants, according to the 2023 work plan, enrichment of the insitiut gene pool, for the National genbank, medicinal sano (Cassia) Tourn L., it was planned to plant in a large experimental area to provide plant seeds.

Keywords: sano, xerophyte, kafiol, anthracsenin, sennazid A, sennazid V, senadae, glaxena, Cassia.

Classification of medicinal sano plant. The Sano plant is semi-shrub, reaching up to 1 m in height. Legumes are a genus of perennial grasses, shrubs or small trees belonging to the Fabaceae (Caesapiaceae) family. The STEM is branched, the branches at the bottom grow by touching the ground. The Leaf is complex, double-pubescent, with 5-10 pairs of thin petals: the flower is white or reddish, the inflorescences are pubescent. Pollen is 10, of which 3 are most often reduced. Basically, there are 500-600 species that grow in the tropics and subtropics (especially in America). Blunt-leaved, thin-leaved and sharp-leaved Sano has a medicinal property common in Arabia. Grown in Central Asia, Kazakhstan, Transcaucasia, southern Ukraine. The stems are branched, the lower branches grow creeping on the ground. The leaves are made up of 4-8 pairs of petals, a pair of feathers is complex, arranged in a row using a Bandy on the STEM and branches. The foliage is a plant with a pointed, pointed tip, an asymmetrical plate, with a flat edge. Its yellow flowers form a shingle inflorescences. The fruit is a flat, leafy ovoid, green-brown in color, multi-seeded legume. Blooms in June until autumn, fruiting is reached from September. The ick type of medicinal sano plant is: bay leaf sano-Cassia ostrolistnaya-(Cassia acutifolia Del) and thin-leaved sano-Cassia uzkolistnaya - (Cassia angustifolia Mill), and their leaf and fruit are used.

Geographical distribution. The medicinal sano species is native to the desert and semi-desert districts of Afirka and southern Arabia, Central Asia, Kazakhstan, the Caucasus and Bukhara region of Uzbekistan, Karakul, Qijduvan, Shafirikon districts, Kucichirchik, Piskent, Midshirchik districts of Tashkent region, the mechanical composition is light soils, on typical gray soils, is a drought-resistant xerophyte plant, mainly found in the thin-leaved sano - (Cassia angustifolia Mill) type, grown as an annual plant.

Agrotechnics of cultivation of Sano. Medicinal sano (Cassia) Tour L., the plant belongs to the legume family and is a semi-shrub plant that reaches up to 1m in height. The medicinal plant sano (Cassia) has xerophyte, light-loving and heat-loving properties. The Sano plant does not like

excessive humidification. It develops well when the soil temperature is 25-30°C. For Sano, it is recommended to plant on soils with a fertile, medium mechanical composition. Sano planting areas are driven out to a depth of 25-28 CM, giving 20-25 tons of organic fertilizer before the Earth is plowed in the fall.

It is not recommended to plant the medicinal sano plant in areas where legumes are planted. Because, the disease of legumes will be close to each other. In the spring before planting, the soil is carried out twice borona. In mid-April, seeds are sown when the soil temperature is 18-20°C at 20.04.2023. Before planting, the Sano's seed is processed in a low solution of sulfuric acid (in a 3:1 ratio) for 18-20 minutes, rinsed it in cold water and sewed to a depth of 2-3 cm on 70 cm egats. It will be advisable to spend an average of 8-10 kg of seeds of a medicinal sano plant per hectare of area.

Depending on this, the Department of selection, seed production and agrotechnics of medicinal plants, planting works are organized in small and large collection nurseries of the Institute. The medicinal sano is propagated from seeds, and the seeds germinate after 12-15 days.

The germination rate drops if the air temperature drops after planting the plant and there is a lot of moisture. And in areas with Spurs, the root is damaged by rot disease, and sprouted sprouts die off over time. After the emergence of sprouts, the field area is cultivated to a depth of 6-8 CM, weeded, yagana is done and watered. After the appearance of the stems, the plant is cultivated to a depth of 8-10 CM, the stems are loosened, weeded and fed with mineral fertilizers.

During the growing season, sanoni is watered 6-7 times, feeding on one hectare with 80-90 kg of nitrogen, 70 kg of phosphorus and 50 kg of potassium. Each fertilization is carried out before watering. After the medicinal raw materials of Sano are mowed, at a speed, the shade is dried in the place, and additional feeding of the areas where the plant is planted is recommended.

To be used. Medicinal sano preparations (tincture, dry extract, in the case of tablets, senadexin are included in the composition of complex sano tincture, poroshogi, general preparations) are used as a dragee. Prefabricated teas, kafiol and anthracsenin preparations used as Sano leaf surgi and in hemorrhoids are part of sennazid A and V, surgi preparations released in India-senadae, glaxena and other preparations. The Sano species is considered one of the medicinal plants that have been used since ancient times among the peoples of Central Asia to treat various diseases.

The tincture prepared on the leaf of Ibn Sina was used in the treatment of gout, bod, liver pain and yellow diseases, as well as as as a surgi medicine. When you have a sore throat and swelling in the throat, it is used to gargle using a sano leaf tincture. In folk medicine, a decoction of the leaves and fruits of sano is used as a laxative for gastrointestinal diseases, especially in chronic constipation.

Preparation and use of the drug.

1. To prepare a tincture from Sano, 0.5 l of boiling water is placed in a container with a closed mouth, on which soy is dried in place, and 50-65 g of a leaf or fruit from pharmacies are placed and infused for an hour. Then strain through gauze and drink in the evening before going to bed, in a glass;

2. Soy is dried in place and taken 7-10 g from a leaf or fruit from pharmacies, placed in 100 ml of boiling water and infused for half an hour. Then it is passed through gauze and used 2-3 times a day in place of a tablespoon of the laxative drug;

3. Taking one of its dried leaves or one of its compounds from the pharmacy (it consists of pressed leaves, cut into 10 pieces, weighing 75 g in total), 2 pieces of it are placed in a glass of boiling water and placed in another container and boiled for 5 minutes. Then an hour is put. Then it is passed through gauze and drunk 2-3 times a day (depending on the condition) one tablespoon;

4. To prepare the decoction, put 5-10 g (1-2 tablespoons) of crushed leaves or 5 filter-bags in an enameled container, pour 100 ml (½ cup) of room temperature boiling water, close the lid and, stirring frequently, heat in a boiling water bath for 30 minutes, after complete cooling at room temperature, strain through gauze and squeeze the remaining raw materials (filter-packages are The volume of the resulting decoction is brought to 100 ml with boiled water. The decoction is stored in a cool place for a maximum of 2 days. One tablespoon is taken 1-3 times a day;

5. Side effects. Allergic reactions can be triggered in hypersensitivity;

6. Contraindications: can not be used in hypersensitivity to intestinal obstruction, acute inflammatory diseases of the gastrointestinal tract, compressed hernia, gastrointestinal and uterine bleeding.

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BIOGEOCHEMICAL CHARACTERISTICS AND SENOPOPULATION OF *CAPPARIS SPINOSA* L.

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Abstract. *The article provides an analysis of the cenopopulation and element composition of the medicinal Capparis spinosa L. distributed in calcisols formed on eroded alluvial-proluvial rock-gravel rocks in the south of the Fergana Valley. The predominance of immature plants in the cenopopulation was detected in the Arsif hills, and quantitative indicators of micronutrients in the vegetative and generative organs of Capparis spinosa L. were determined. The study of biomorphological characteristics of the plant during the growing season (April-October) was carried out in the identified 10 observational experimental field populations. Soil, plant element analysis was performed by neutron-activation method. In this case, the samples were irradiated in a nuclear reactor with a neutron flux of $5 \cdot 10^{13}$ neutrons/cm²sec, and their quantities were determined in accordance with the half-life of chemical elements.*

It has also been compared with research materials conducted by world scientists on the importance and pharmacological properties of botanicals in medicine and the food industry, as well as their botanical characteristics.

Keywords: *medicinal plants, Capparis spinosa L., calcisols, microelement, cenopopulation analysis, grass, juvenile, immature, virginil stage, generative, senile period.*

1. Introduction

Mankind has been using various herbs for thousands of years to find a cure for its ailments, and people have been particularly well aware of the properties of medicinal plants and have been able to use them effectively. Unfortunately, nowadays, natural medicinal plants have been virtually non-existent. According to the data, only 2.3% of the 6,400 types of medicines consumed in our country are natural medicines. If we look at the countries of the world, the propagation and processing of medicinal plants is widely developed in countries such as China, India, Canada and the United States. China alone produces 700,000 tons of medicinal plants a year, of which 122,000 tons of raw materials worth \$ 822 million are exported and \$ 50 billion is traded through processing. Despite the high potential of the industry in our country, the existing opportunities are not used enough. In 2019, the country exported 19,000 tons of medicinal plants, finished and semi-finished or raw materials worth \$ 48 million. Today, 93 enterprises produce medicines from 89 types of medicinal plants. Only 7% of the volume of natural medicines in total consumption is accounted for by local manufacturers. The results of the analysis show that the protection of natural resources of medicinal plants, their rational use, establishment of plantations, reproduction of competitive species in domestic and foreign markets, introduction of new species of medicinal plants suitable for soil climatic conditions, creation of value chain through primary and deep processing shows that the work being done in this area is lagging behind the requirements of the time.

One of the most pressing issues of today is the development of technology for the cultivation and cultivation of natural flora and medicinal plant species belonging to foreign flora,

targeted research to obtain environmentally friendly products, introduced into medical practice. One such naturally occurring medicinal plant species is the *Capparis spinosa* L. plant.

Scientific sources and foreign publications on the origin of *Capparis spinosa* L., its distribution on the planet (Farooq Anwar *et al.*, 2016), botanical and genetic, medicinal properties, macro and micronutrient content (Jiang *et al.*, 2007), cultivation and cultivation agrotechnology (Chedraoui *et al.*, 2016), technology of food production and data on cost-effectiveness (Badr *et al.*, 2007) abound.

Numerous scientific studies have been conducted on the bioecological and medicinal properties of *Capparis spinosa* L., chemical composition of fruit elements, cultivation techniques, botanical properties (Zokirov and Khudoyberganov, 1972), development of desert areas, application in biological regeneration, reproduction, development of biotechnology (Eshonkulova, 2018).

The properties and characteristics of the soils of the Fergana Valley, where these plant areas are widespread, have been studied by many researchers (Turdaliev and Yuldashev, 2015; Isaev *et al.*, 2020), but their biogeochemistry in the soil-medicinal plant system has not been thoroughly studied.

Cenopopulation analysis of the distribution of this plant species in the southern Fergana hills, biogeochemical properties of the plant and its distribution soils, elemental composition of soils and plant organs, medicinal properties and raw material reserves are not sufficient. In addition, the study of biomorphological features of *Capparis spinosa* L., distribution areas in the calcisols of southern Fergana, the study of the elemental composition of vegetative and generative organs, the location of this species in the vegetation, its cenopopulation analysis.

In the following period, population growth dramatically increased the demand for medicinal plants. As a result, due to the unplanned use of medicinal plants, their natural resources are reduced, and even some species have to be included in the Red Book. Therefore, the cenopopulation analysis, which reveals the soil-climatic conditions of each species and the laws of natural regeneration, is of great scientific and practical importance.

Material method

The object of study is the light calcisols formed on the protected, eroded weakly skeletal alluvial-proluvial rocks of southern Fergana, and the plant *Capparis spinosa* L., which is widespread in this area.

The biomorphological characteristics of the plant during ontogeny were studied using the methods of cenopopulation analysis (Smirnova, 1976), root system (Krasilnikov, 1983). At the same time, the name of the plant species is based on the work "Opredelitel rasteniy Sredney Azii" (Kamelin, 2015) and the International Electronic Database Names Index (www.ipni.org).

Methods were used to study the seasonal development of the plant, i.e. the formation of grass during the growing season, the formation of true leaves, the growth of twigs and stems, budding, the beginning and end of flowering, the formation and ripening of fruits, the end of the growing season (Beydeman, 1974). The study of the duration of the flowering period was conducted in the identified 10 observational experimental populations.

The morphogenetic methods of V.V.Dokuchaev, pedogeochemical approaches of M.A. Glazovskaya and A.I.Perelman were used as the main methods in the study of soil properties of *Capparis spinosa* (Yuldashev and Isagaliev, 2014). Soil, plant element analysis was performed by neutron-activation method. In this case, the samples are $5 \cdot 10^{13}$ neutrons/cm²sec in a nuclear

reactor irradiated with a neutron flux, and their quantities are determined in terms of the half-life cycles of the chemical elements.

The research findings and discussion

In biogeochemical research, the identification of correlations between the chemical, more precisely the elemental composition of plants and the elemental composition of the soils in which they grow is of great scientific and practical importance in establishing programmed yields in agriculture. In particular, knowledge of the exact amount of macro and micronutrients in the generative and vegetative organs of the plant *Capparis spinosa* L.: roots, stems, leaves, buds, flowers, fruits also expands the use of this plant species in phytobars, food and pharmaceutical industries.

The study of ontogenetic and phenological properties of plants is one of the most convenient and effective methods to determine changes in different phases of the observed plant species, their resistance to environmental conditions, productivity, as well as the rhythm of life processes in them.

Research work has been carried out in the southern Fergana hills (Arsif, Satkak, Chimgan, Altariq) since 2017. These hills are located at an altitude of 500-750 meters above sea level. These areas are weak and moderately plastered, gravelly, skeletal, perennial precipitation of 180-200 millimeters. These soils have low and low levels of humus and nutrients. The level of coverage with natural vegetation is 40-60% depending on the slope exposure. The main part of these plants are ephemeral and ephemeroïds.

Capparis spinosa L. Capparaceae (Capparidaceae) is a family of two genus plants with 40 genera and 850 species. Most of the plants belonging to the *Capparis* family are wild species, which are mainly distributed in arid regions of tropical and subtropical regions (Eshonkulova, 2018; Hansen, 1991).

Geographically, *Capparis spinosa* L. is native to the Mediterranean, southern Europe, the Caucasus, Crimea, Azerbaijan, Turkmenistan, Kazakhstan, Uzbekistan, Pakistan, and India. This plant is cultivated in France, Spain, Italy, Algeria, Cyprus, Greece and North America. The name of the plant is associated with the Dashti-Kavir desert in Iran. Because *Capparis spinosa* L. is the most common plant species in these areas (Hammerman, 1990; Obidov, 2021).

The natural distribution of *Capparis spinosa* L. in Uzbekistan depends on different geographical conditions. In particular, it can be found on rocky hills, sometimes in fields, on roadsides, along ditches, on hills, around railways, on the dry banks of canals, near old walls [5].

During our studies, it was found that this species has entered the desert and semi-desert zone, in the foothills and lower mountain regions, sometimes up to the middle zone of the mountains. The study of the biological and ecological properties of any plant requires, first of all, the study of its condition under natural conditions. The natural adaptation of *Capparis spinosa* L. to soil and air drought allows it to grow in arid areas where water is scarce and in soils with high concentrations of water-soluble salts.

Capparis spinosa L., has been observed by M.S.Saksali et al as a promising plant that can grow in arid and strongly saline soils with nutrient deficiencies as well as in high temperature regions (Sakcali, 2008).

The length of the stem of plants distributed in the study areas reached 70-170 centimeter depending on the growing conditions. The inside of the newly formed young stems is covered with fine short hairs, but the hairs fall off as the branch grows during the growing season. The color of

the stem is green, there are twisted spines on the underside of the leaf bundle. The number of side branches was 2-6, depending on the stage of development, and was 10-15 centimeter long. Stem diameter 7-12 millimeters. The leaves on the stem of the plant differ in shape, width and length. Usually the leaf shape is round, inverted ovate or elliptical, 3-6 cm long, green, hairless or the lower side is scattered hairs, arranged in series on the main stem and lateral branches through a short leaf band.

The flowers are solitary, slightly zygomorphic, 5-8 centimeter in size, fragrant, located in the axils of one leaf, the petals are 4, curved, ovoid, green, covered with small short hairs on the outside. The petals are 4, but 2 are up to half, white or light pink, many paternal pollen, varying in length, pollinated, brown (flowers turn red after pollination). The flowers are 4-6 cm long. It blooms in April-May, depending on the amount of precipitation in the study area. The fruit is a multi-seeded berry. The color is green, with long white stripes. The shape is inverted ovate, oblong, walnut or round, many-seeded, elongated. The outside is smooth, the inside is dark red. The fruit resembles the appearance of a watermelon. When the fruit was ripe, the fruit peel turned outwards and opened. Fruits are 3-5 centimeter long and 1.3-2.7 centimeter wide (Obidov *et al.*, 2021).

From ancient times the herb is used in the treatment of toothache, heart and headaches. To do this, tinctures are prepared from various organs of the hive (flower, root, leaf, fruit). The ancient Arabs used *Capparis spinosa L.* root to treat various allergic and rheumatic diseases. Due to its strong anti-inflammatory use and analgesic properties, *Capparis spinosa L.* is one of the most effective medicinal plants, so it has been used as a remedy against various diseases. From this point of view, today in the world pharmaceutical industry the preparation of drugs based on these recommendations is widely practiced. In particular, for the first time in medicine, the Indian company Himalayan Drak developed and tested the drug Liv-52 for the treatment of liver diseases, and now it is used effectively in medicine. The main part of the drug, ie 65%, is made up of *Capparis spinosa L.* products (Movafeghi, 2008; Isagaliev *et al.*, 2019).

Today, the regular addition of *Capparis spinosa L.* to the diet helps to relieve rheumatic pains. Currently, all parts of the plant are used in modern medicine and folk medicine in the treatment of meteorism, goiter, dentistry (gum and dental diseases), cardiovascular diseases, as well as hypertension, pruritus, jaundice, neurosis, brucellosis (Farooq Anwar *et al.*, 2016).

Results

Given the growing demand for raw materials of *Capparis spinosa L.*, the need for in-depth study of its biogeochemistry and agroecology was put on the agenda, given the special attention paid to its export potential. It is important to determine the position of the *Capparis spinosa L.* in the vegetation cover, the status, ontogeny and viability of the populations that determine its natural recovery, and thus its current and future raw material reserves.

Preliminary results of the analysis of *Capparis spinosa L.* cenopopulation in 10 experimental observation sites (100 m² each) in Arsif, Satkak, Chimgan, Altariq hills were as follows (Table 1, Figure1): grass (p) plants averaged 6.0, 5.0 plants belonging to the juvenile (j) state, 10.8 plants belonging to the immature (im) stage, 5.5 plants belonging to the virginil (v) state, 3.5 plants belonging to the generative (g) period, plants typical of the senile (s) period were 2.3. In relatively warm climates, the growth of these plant grasses occurs in early April. Observations in our experimental fields revealed that *Capparis spinosa L.* grasses germinate in late April to early May. In grasses, the seeds have 2 leaves, 2-3 cm in height, the roots are 12-14 cm

long and branched up to 2 rows. It was observed that 80-85% of the grasses pass to the juvenile stage in late May and early June.

In the juvenile mode, the seeds continue to grow in the palla leaves. Plants belonging to this stage are 5-7 cm tall, forming 3-4 leaves, the first true leaves are smaller. It was later observed that each chin leaf that grows grows longer than the previous one. The main root reaches 20-22 cm and branches in 2-3 order. The peculiarity of this stage is explained by the drying of the seed palla leaves.

Plants belonging to the immature stage are observed in mid-June, their height is 15-20 cm, the main root is 45-50 cm, branched to 2-3 (4) order. It was observed that 60-70% of plants belonging to the immature stage go to the virginil stage in late June and early July, and 10-15% go to the virginil stage in early May after the winter dormancy period. The duration of the immature phase lasts from 20-25 days to 10 months.

Seedlings of *Capparis spinosa* L., plants belonging to the juvenile and immature stages, are resistant to drought, but most of them die due to the crushing of livestock.

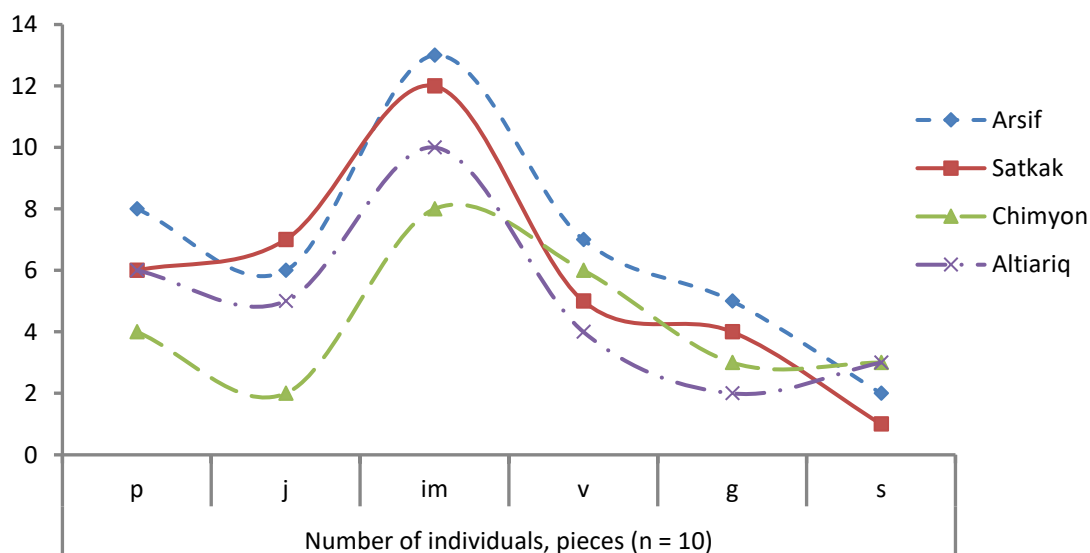


Figure 1. Graph of *Capparis spinosa* L. cenopopulation in elementary landscapes

Plants belonging to the virginil stage are observed in late June to early July, the length of their main stem reaches 40-80 centimeter, and it branches up to 2 orders. The root reaches 90-110 centimeter and branches in 3-4 orders. At this stage is characterized by the formation of thorns on the stems and the thickening of the main root (diameter 4–5 millimeters). The duration of the virginil state depends in many respects on external environmental factors. It was observed that 15-20 per cent of virginil plants enter the full generative period in the first year and the rest in the second year.

Vegetation of plants belonging to the middle-aged generative stage in the Arsif hills lasted from April to December. The length of the main generative stem is 70 -170 centimeter, branched to 2-3 rows, leaves 4x3 centimeter. In one bush formed an average of 9–14 generative stems. Growing of generative plants was observed in May, flowering in late May, and the formation of fruits began in the second half of June.

The fruiting process of *Capparis spinosa* L. lasted from June to October. One bush, *Capparis spinosa* L., produced an average of more than 80 fruits (180-210 in the Arsif and Satkak hills) on the Chimgan hills, and 150 on some bushes. An average of 220-235 seeds were observed in each fruit, the absolute weight of 1000 seeds was 7.25 g. Seed length 1–3 millimeters kidney-

shaped, brown (Sher, 2009). It was found that the length of plant seeds in the study areas was 2.8-3.3 millimeters. Fruit ripening took place in the second decade of July in the hills of Arsif and Satkak, and in the hills of Chimgan and Altiyarik in late July and early August.

In our country, extensive research has been conducted by academician K.Z.Zokirov and professor R.Khudoyberganov on the botanical properties of *Capparis spinosa* L., the chemical composition of fruits and seeds, nectar separation and cultivation techniques. N.T.Eshonkulova studied the use and cultivation of *Capparis spinosa* L. in the development of the arid climate of the country, the development and implementation of technology for the preparation of food products with a unique chemical composition. However, the properties of the plant and the soil, its biogeochemical properties in relation to the composition of the chemical element have not been studied. In our study, the cenopopulation of the *Capparis spinosa* L. plant, the migration of chemical elements in the plant-soil chain, and the biogeochemical properties were studied.

This plant is valued by many peoples of the world as a potential source of nutrients, vitamins, phenolic compounds, flavonoids, nutrients in its organs, as well as its strong antioxidant properties and ability to grow in arid conditions.

According to the data, 100 g of *Capparis spinosa* L. contains: phosphorus (679 mg/g), sodium (652 mg/g), calcium (419 mg/g), magnesium (213 mg/g), potassium (157 mg/g), macro and micronutrients such as iron (6.8 mg/g), zinc (5.5 mg/g), manganese (3.30 mg/g) have been reported (Badr S.A *et al.*, 2017).

The difference of this species from other medicinal plant species is the breadth of its use in folk medicine, modern medicine, pharmaceuticals, food and cosmetics industries. In particular, in cooking, unopened buds of this plant are also used young twigs (Al-Soqoer, 2011), mainly consumed by their proper selection, salting or marinating (Zhang and Tan, 2009). In the process of marinating the *Capparis spinosa* L. in vinegar, mustard oil is added to it to create a unique taste. Under the influence of marinade, the formation of white spots is observed, which is associated with rutin (vitamin PP) crystals (Trili *et al.*, 2009; Gyaneshwar, *et al.*, 2002). In European countries, bitter *Capparis spinosa* L. garnishes a variety of salads, pizzas, sauces, meat and fish dishes (Petanidou, *et al.*, 1996). The dried leaves of *Capparis spinosa* L. are used in the preparation of dry cheese and as a yeast instead of a sedative, wrinkling enzyme (Soyler and Arlan, 2000).

Capparis spinosa L. buds contain elements of vitamin K, potassium, calcium and magnesium, which strengthen the bones and prevent the development of osteoporosis. *Capparis spinosa* L. prevents hair loss due to the presence of iron and B vitamins, makes hair grow beautiful and shiny (Rhizopoulou and Psaras, 2003).

The recent discovery of the substance stachidrin in *Capparis spinosa* L. has aroused great interest among scientists. This substance has strong antimetastatic properties and is used in the treatment of prostate cancer. This substance stops the growth and development of cancer cells. This scientific breakthrough is important in the development of anti-cancer drugs. The use of this plant in bowel cleansing and prevention of colon cancer plays an important role (Zhang *et al.*, 2012).

The high content of sodium in the vegetative and generative organs of plant species, especially in saline soils of desert areas, requires caution in some diseases. *Capparis spinosa* L. may be problematic in humans when consumed in the following diseases: hypotension, constipation, and is not recommended for pregnant women because high sodium levels have been

shown to affect the fetus, in individual cases, and in some cases to cause allergies (Eshonkulova, 2018).

Although biologically active organic substances in medicinal plants have been systematically studied, biologically active mineral elements have not been adequately studied. As a result of the growing number of drugs made from medicinal plants, the analysis of their elemental composition is one of the most important tasks.

It is known that the amount of chemical elements and substances varies in different soil types (Table 2). Therefore, the chemical element composition of plants depends on the amount of chemical elements in the soil in which the plant grows.

Table 1

Amount of microelements in soils (n = 7)

Section number	Depth of cut cm	Element (µg/g)			
		Mn	Zn	Co	Mo
Calcisols					
1 M/O	0-10	370	55.8	4.71	<0.1
	10-30	430	37.1	7.35	1,6
	30-56	520	59.8	7.45	0,55
	56-120	420	61.1	8.58	1,1

According to the data in Table 2 above, the amount of chemical elements in soils formed under different conditions varies, due to soil genesis, soil-climatic conditions, use in agriculture, and so on. Strengthening the process of hydromorphism leads to an increase in the amount of Mn, Zn, Mo in the soil and its layers from calcisols to meadow soils. This can also be explained by the fact that the geochemical migration of these elements towards a naturally dependent landscape is accumulated under the influence of agriculture with the use of mineral and organic fertilizers.

The elemental composition of the *Capparis spinosa* L. which is widespread in the calcisols of South Fergana, changes under the influence of soil properties, plant type, natural climatic conditions and other factors. It was observed that the amount of elements in the composition of *Capparis spinosa* L. varies several thousand times depending on the physiological properties of plant organs.

Table 2

The amount of micronutrients in the organs of *Capparis spinosa* L. (µg/g) and the coefficient of biological absorption, (n = 14)

Plant	Plant organ	Microelements (µg/g)				Biological absorption coefficient			
		Mn	Mo	Co	Zn	Mn	Mo	Co	Zn
<i>Capparis spinosa</i> L.	Root skin	32	5,2	0,25	27	0,086	52	0,053	0,48
	Root core	9,0	0,55	0,16	5,1	0,024	5,5	0,034	0,09
	Stem	16	0,29	0,086	14	0,043	2,9	0,018	0,25
	Leaf	100	1,8	0,18	30	0,270	1,8	0,038	0,54
	Bud	26	0,58	0,12	33	0,070	5,8	0,025	0,59
	Flowers	24	0,50	0,13	30	0,065	5,0	0,028	0,54
	Fruit	34	2,1	0,19	34,1	0,092	21	0,040	0,61

The table shows that the amount of micronutrients studied varies in plant organs, or Mn 9-100 µg/g, Mo-0.29-5.2 µg/g, Co-0.086-0.25 µg/g and Zn-5 µg/g. Oscillations in the range of 1–34.1 µg/g were detected. Of the trace elements studied for absorption into plant organs, the highest

amount is Mo (52 µg/g in the root bark) and the lowest amount is Co (0.018 µg/g in the stem). Note that the element Mn is absorbed in very high amounts in the plant leaf, Mo in the root bark compared to other organs, and Zn is accumulated in large quantities in the fruit. If we pay attention to the classification of the studied elements in terms of their biological role (Skalny, 2004), they are among the biogenic, essential elements necessary for life.

According to the methodology, Mo belongs to the group of strong and very strong aggregates by root bark and fruit. According to the range of biological absorption coefficients, the elements Co, Zn, Mn belong to the group of very weak, weak and moderately biodegradable, respectively.

This, in turn, satisfies the need for certain macro and micronutrients by consuming a biologically active supplement made from this medicinal plant as well as the daily norm of food. The study of the correlation between the elemental composition of the plant and the elemental composition of the soil in which it grows expands the scope of its use in folk medicine, phytobars, modern medicine and pharmaceutical industry. This makes a huge contribution to socio-economic development.

The main economic importance of *Capparis spinosa* L. is related to the types of products made from it. In particular, pickled flower buds, known as "capers" or "caper berry", are the main subject of trade in international markets. In recent years, the annual growth rate of production from *Capparis spinosa* L. has increased by 6%. Currently, pumpkin is valued as an important consumer product in the United States and about 60 countries around the world, where the cost of 1 kg of ready-to-eat product is \$ 25. From this round, the Chinese earn 3 million a year. They are making a profit in the amount of USD. Today, the Kingdom of Saudi Arabia, Lebanon, Syria, and the Mediterranean countries have proposed *Capparis spinosa* L. as the main crop type to raise the socio-economic level (Ozcan, 2000; Saadaoui *et al.*, 2011).

However, some cosmetic products derived from the fruit extract of *Capparis spinosa* L. (e.g., Gatuline Derma-Sensitive-\$ 74.99; Skin moon-\$ 76; Skin save-\$ 7.70) are used as anti-aging, skin protection, or anti-inflammatory agents. was commercialized and put up for sale (Sher and Alyemeni, 2010).

In practice, according to the technical regulation TR TS 021/2011 "On the safety of food products" in Russia, the drug IPOSEA in acetic acid is 102.00 rubles, the drug IBERICA is 183 rubles. salty Federici drug is sold in pharmacies at a price of 276 rubles, vinegar wine drug at 370.0 rubles. There are also high-quality certified varieties 107 - ISO 9001 and 25 - ISO 22000 (Kholikova *et al.*, 2019).

In Jizzakh region of the country, 12 enterprises have launched the export of *Capparis spinosa* L. It should be noted that until recent years, this plant has been neglected, whereas *Capparis spinosa* L. is a very valuable raw material in the pharmaceutical, food industry. In 2019, in Jizzakh region, this plant was harvested from existing natural resources and cultivated. 1909 tons of ready-to-eat products were made from its flower buds and fruits. It exported \$ 3.2 million worth of goods to Turkey and Spain.

Conclusions

According to the observations, the viability, drought tolerance of *Capparis spinosa* L. populations is relatively high, and plants belonging to the immature and virginil stage are 5-10 times more than senile. This shows that it is possible to collect raw materials from the southern Fergana hills on a regular basis. Determining the quantitative supply of nutrients and medicinal

substances in *Capparis spinosa* L. and other medicinal plants will further increase the productivity and medicinal properties of medicinal plants.

The series of biological absorption is assimilated in the form of $0,0n \rightarrow 0,n \rightarrow n \rightarrow 10n$, depending on the amount of elements studied. Molybdenum occupies a very strong biological accumulator, while manganese, zinc, and cobalt occupy a medium, weak, and very weak retention line.

By studying the amount of chemical elements in the organs of the plant *Capparis spinosa* L. depending on the composition of the soil, it is possible to assess its sanitary and hygienic characteristics, as well as the level of safety in pharmaceutical use and food preparation. Because this plant has anti-cancer, anti-microbial and anti-viral effects, it requires in-depth study of its chemical composition. *Capparis spinosa* L. can be used as a raw material in the creation of new drugs.

The growing demand for natural and environmentally friendly products made from *Capparis spinosa* L., the global increase in its use in the food industry, modern medicine, the increase in natural products made from it in the pharmaceutical and cosmetic industries, in turn increase the pressure on natural resources of this species. This would jeopardize the natural reserves of *Capparis spinosa* L. in the future. Therefore, research on the study of the plant *Capparis spinosa* L. shows the need to focus on its cultivation and intensive cultivation, conducting cenopopulation analyzes to assess the available natural resources.

Conflicts of interest

No conflict of interest was declared by the authors.

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GYNECOMASTIA - AS AN IMPORTANT ISSUE IN MODERN MEDICINE

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Abstract. *Gynecomastia is an enlargement of the mammary glands in men, which is more often bilateral and less often unilateral. In the presence of pronounced unilateral gynecomastia and suspicious palpation results, it becomes necessary to exclude breast cancer. Children of both sexes have breast tissue.*

Keywords: *testosterone, estradiol, galactorrhea, leydigoma, hypercomastia.*

The development of mammary glands depends on androgenic and estrogenic stimulations. With the predominance of estrogenic influences, when the activity of androgens is low, the development and differentiation of breast tissue occurs, and, conversely, when the androgenic activity is higher than the estrogenic, the mammary glands remain underdeveloped. In adult men, the molar ratio of testosterone / estradiol in plasma is approximately 300/1. A slight deviation from this value towards a decrease in the level of androgens or an increase in the content of estrogens can stimulate the proliferation of previously inactive breast tissue and lead to the development of gynecomastia. Gynecomastia also develops when the function of androgen receptors is impaired. In such cases, both normal and elevated levels of androgens can lead to the development of gynecomastia. Prolactin stimulates lactation, but it plays a secondary role in the development of breast tissue. At the same time, if an excess of prolactin leads to the development of endocrine hypogonadism, gynecomastia and galactorrhea develop. Testicular tumors (leydigoma, embryonic carcinoma, teratocarcinoma, chorioncarcinoma, combined tumor) directly or through an increase in HCG secretion lead to an increase in the production of estrogens by Leydig cells. With chronic diseases (cirrhosis of the liver, hyperthyroidism), with a number of pathological conditions (for example, renal insufficiency) and with the use of certain drugs, gynecomastia can develop against the background of normal levels and the ratio of androgens and estrogens. The reason for the development of gynecomastia in such cases is not yet clear. The cause of gynecomastia cannot be found out in about 50% of men. Such forms of gynecomastia are considered idiopathic. Gynecomastia often develops in boys at puberty (at the age of 14), but after 2-3 the year disappears. The development of obesity is accompanied by more pronounced gynecomastia, which persists longer. Physiological gynecomastia is a small increase in the mammary glands that occurs in newborns, adolescents and elderly men. In newly born boys, maternal estrogens penetrating through the placenta lead to hyperplasia of breast tissue, which does not last long and spontaneously regresses. Adolescent hypercomastia is often considered a variant of the norm and it does not require treatment. Palpation of the mammary glands reveals a certain amount of glandular tissue in about 40% of adolescent boys. In some cases, the proliferation of glandular tissue occurs, which leads to a more pronounced increase in the mammary glands and creates discomfort in patients of a psychological nature. However, the cause of pronounced gynecomastia in the young may be endocrine or systemic diseases, so in such cases it is necessary to conduct an examination of the patient. To exclude pathology, it is necessary to examine the basal levels of testosterone, estradiol, LH and FSH. At the same time, it is important to assess the

degree of general androgenization of the patient, because with simple adolescent gynaecomastia, there are no permanent hormonal shifts. Usually, adolescent gynecomastia develops after the onset of puberty, and the presence of gynecomastia without other signs of puberty may be a consequence of endocrine disease (in most cases, a hormone-producing tumor). Adolescent gynecomastia regresses spontaneously, but in some cases it may persist, then it is called persistent adolescent gynecomastia. In this case, endocrine or any general diseases cannot be detected, patients note the development of gynaecomastia only in adolescence, and in the future it does not progress. Senile gynecomastia. With age, the incidence of gynecomastia increases, which is associated with an increase in the ratio of estrogens / androgens. During this period, the proliferation of breast tissue is associated with a number of common diseases (renal or hepatic insufficiency), taking certain medications, for example, spironolactone or veroshpiron (a competitive aldosterone antagonist), digoxin, angiotensin-converting enzyme inhibitors and cytotoxic compounds (Morley et al., 1990). When painful gynecomastia occurs, a rapidly progressive enlargement of the mammary glands occurs. In such cases, it is necessary to differentiate gynecomastia with breast cancer. Breast cancer occurs in men aged 50-70 years and accounts for 1% of all cases of breast cancer. It is also necessary to exclude paraneoplastic, or HCG- producing bronchial cancer, as well as paraneoplastic tumors of the testicles, liver, adrenal glands or gastrointestinal tract. Gynecomastia can be observed in all conditions in which there is a lack of androgen production or a violation of their action. With Klinefelter syndrome, gynecomastia develops in combination with small dense testicles. Proliferation of glandular tissue is also observed in Kallmann syndrome, idiopathic hypogonadotropic hypogonadism, Reifen- Stein syndrome, X-linked spinal and bulbar muscular atrophy, pro- interstitial-scrotal hypospadias with pseudovaginal. Excessive secretion of estrogens in the gonads or adrenal glands or their formation from androgens on the periphery also lead to the development of gynaecology. Primary estrogen-producing tumors of the testicles (from Leydig or Sertoli cells) and adrenal glands (especially cancer) are rare, but they should be remembered when conducting differential diagnosis of gynecomastia. Increased production of estrogens is also observed when stimulated by an increased amount of chorionic gonadotropin. The source of HCG formation can be testicular teratomas, chorioncarcinomas and embryonic carcinomas, as well as extra-gonadal tumors, especially of the lungs and liver (Meschede D., Behre H.M., Nieschlag E., 2005). It is known that estrone and estradiol are formed from androgens androstenedione and testosterone under the action of the aromatase enzyme. There is a rare hereditary form of gynecomastia associated with increased activity of the aromatase enzyme. With this form of mastopathy, the levels of androgens in the blood may be within normal values, but the rate of their conversion into estrogens increases. In some cases, the acceleration of the conversion of androgens into estrogens may exceed the norm in 10 times. The cause of this pathology is unknown, the disease is inherited as an autosomal dominant or X-linked trait (Belkovitz et al., 1985). It is believed that increased conversion of androgens into compounds with estrogenic properties may occur in breast tissue. It is possible that in men with gynecomastia, there is an increase in the sensitivity of the mammary gland vascular tissue to estrogenic influences. This could explain some cases of familial gynecomastia. 1/3 of men with hyperthyroidism develop gynaecomastia, which is associated with an increase in the production of estrogens in untreated hyperthyroidism. An increase in the level of estrogens is accompanied by an increase in the formation of globulin binding sex steroids in the liver, which leads to a decrease in the level of free, biologically active testosterone . It is assumed that it is the deviation of the androgen/estrogen ratio from the norm that

leads to the development of obvious gynecomastia. With congenital hyperplasia of the adrenal cortex (insufficiency of the enzyme 21-hydroxylase) and androgen-secreting tumors of the adrenal cortex, the level of androstenedione is increased and, accordingly, the amount of estrogen produced may increase, since androstenedione is a substrate of the aromatase enzyme. Chronic liver and kidney diseases can also be accompanied by gynecomastia. In some cases, changes in the androgen/estrogen ratio are detected in such patients. Many medications can affect the ratio of androgens/estrogens, which leads to the development of gynecomastia. However, in some cases it is not possible to establish exactly what exactly they caused the development of this disease. The effect of drugs that cause the development of gynecomastia is diverse, but some of them disrupt the synthesis of testosterone. Thus, drugs with antitumor effect disrupt the synthesis of testosterone, which is a non-specific phenomenon of their general toxicity. Ciproterone-atse-tat, a drug used in the treatment of hyperandrogenia, acts on androgen receptors and blocks them. The antifungal drug ketoconazole has an inhibitory effect on the production of androgens in the adrenal glands. Estrogens and similar substances that contribute to the development of gynecomastia can enter the body both with food and through the skin (from cosmetics). Tumors of the mammary glands in men are rarely detected. Unilateral breast enlargement in men is a stage in the development of bilateral gynecomastia, but in these cases it is necessary to exclude the presence of a tumor (O'Hanlon et al., 1995). Androgen and estrogen receptors are found in breast cancer tissue in most cases, but their presence seems to have only a small diagnostic, therapeutic and prognostic value (Pich et al., 1999). Many men with breast cancer have BRCA2 gene mutations, which suggests the existence of a genetic predisposition to this disease (Csokay et al., 1999). In the literature, there are descriptions of cases of breast cancer in men with androgen receptor gene mutations (Wooster et al., 1992). Any asymmetric, painful and dense swelling in the area of the periarticular circle should cause oncological alertness in the doctor and requires referral of the patient for examination, including taking a biopsy of material from this area. The use of the following drugs and drugs leads to the development of gynecomastia in men (Meschede D. et al., 2005) (Meschede D. et al., 2005): amphetamines, antitumor agents, calcium channel blockers, cimetidine, diazepam, digitalis, estrogens, flutamide, human chorionic gonadotropin, angiotensin-converting enzyme inhibitors, isoniazide, ketoconazole, marijuana, methyl dopa, metronidazole, opiates and opioids, penicillamine, reserpine, spironolactone, tricyclic antidepressants. Laboratory tests are prescribed depending on the form of gynecomastia. If gynecomastia is adolescent or senile, poorly expressed and does not progress, then there is no need to conduct a thorough examination of the patient. We can limit ourselves to the study of the levels of LH, FSH, estradiol and testosterone (Bowers et al., 1998). With more pronounced gynecomastia, there is a need to study the concentration of testosterone, estradiol, SHBG, LH, FSH, prolactin, TSH, β -hCG, alphafetoprotein, as well as the determination of liver and kidney function. In some cases, hormone levels are examined in dynamics, DNA analysis and karyotyping are performed. It is necessary to find out whether the patient took pharmaceutical or narcotic drugs, as well as alcohol. Clinical examination of a patient with gynaecology includes, first of all, palpation of the mammary glands. Palpationally, it is possible to detect a certain amount of glandular tissue in many men. However, it is difficult to establish the presence of pathology in such cases and the clinical assumption of the presence of gynecomastia often remains subjective. First of all, it is necessary to differentiate gynecomastia from lipomastia. Obese men often have deposits of fatty tissue on their breasts. It is possible to establish the presence of lipomastia or gynecomastia by palpation,

but this can only be clarified during ultrasound. As already noted above, gynecomastia is often one-sided or more pronounced on one of the sides. The reasons for this asymmetry have not been established. The degree of gynecomastia is assessed in accordance with the stages of development of the mammary glands according to Tanner (Meschedi D. et al., 2005): stage 1: prepubescent mammary glands (glandular tissue is not palpable); stage 2: the beginning of development (mammary glands are detected during examination, glandular tissue is palpated, periarticular circles increase); stages 3 and 4: further enlargement of the mammary glands (at stage 3, the periarticular circles do not rise above the surface, at stage 4 they rise); stage 5: mature mammary glands (outlines and proportions characteristic of adults, near-nipple circles no longer rise above the surface). When examining patients with gynecomastia, it is necessary not only to conduct a study of the mammary glands, but also to pay attention to the degree of virilization, the presence of symptoms such as a weakening of libido or potency, general lethargy, and the absence of pronounced hairiness in the chin area.

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UTERINE ARTERY EMBOLIZATION AS A METHOD OF TREATMENT OF UTERINE FIBROIDS

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Abstract. UAE can be used to reduce the volume of myomatous nodes and reduce intraoperative blood loss in patients before hysterectomy of submucous nodes, as well as laparotomic and laparoscopic myomectomies, significantly expanding the indications for the use of endoscopic access.

Keywords: uterine fibroids; uterine artery embolization.

The use of uterine artery embolization (UAE) for the treatment of uterine fibroids began in the early 1990s in France. French gynecologist J. Ravina, when using endovascular occlusion of the uterine arteries before hysterectomies or myomectomies in patients with uterine fibroids, in order to reduce subsequent intraoperative blood loss, noted the disappearance or decrease in clinical manifestations of the disease in a significant part of patients with simultaneous reduction in the size of the uterus and fibroid nodes in 1995, a group of researchers led by J. Ravina presented the experience of using UAE for the treatment of uterine fibroids in 16 patients. Speaking about the method today, we can say that since the early 2000s, after receiving the results of UAE on large series of patients [14, 16, 24], the data of the "UAE register" (study FIBROID) [26, 22] and, finally, the results of prospective multicenter studies [9, 27] a real boom in the introduction of UAE into clinical practice has begun and continues to this day. In 2004, an industry standard on the use of UAE was published, developed jointly by several dozen leading specialists in the field of gynecology and endovascular surgery [21]. Today, all over the world, UAE has taken a strong position as an alternative method to hysterectomy in patients with uterine fibroids, i.e. most indications for radical surgical treatment are those for UAE. There are at least 300 centers in the USA alone that actively use UAE for the treatment of uterine fibroids and have significant experience. Unfortunately, their number does not exceed 10-15 in our country, which is facilitated by the absence of endovascular surgery departments in most medical institutions, as well as low awareness of specialists about the possibilities and prospects of endovascular technologies in obstetrics and gynecology. The method of endovascular occlusion of the uterine arteries itself is carried out in the conditions of X-ray surgery, which, in turn, can be either standardly equipped, stationary, or represented by a mobile installation. In gynecological practice, standard unilateral access through the right femoral artery according to the Seldinger method is the most frequent, only in 1.42% of cases a puncture of the contralateral femoral artery is required. Immediately before the UAE, all patients undergo selective angiography of the vessels of the pelvic organs, during which a step-by-step assessment of the femoral and iliac arteries is carried out. The next stage is alternate catheterization of the uterine arteries. For this purpose, the catheter is carried through the aortic bifurcation into the contralateral internal iliac artery and is lowered to the place of discharge of the uterine artery. After the catheter is installed at the mouth of the uterine artery, emboli are inserted into the lumen of the vessel under constant X-ray visual control. When signs of completion of embolization appear, embolization is similarly performed on the other side. It is

important that with UAE, the cessation of blood flow occurs only in the vessels feeding the fibroids, and does not affect the healthy myometrium in any way. After the removal of the catheter, the final stage of the operation is started - hemostasis, which consists in manual compression of the puncture site of the artery throughout 10-20 minutes, followed by applying a pressure bandage. At the moment, the problem of choosing an arterial access for performing an UAE is a solved issue, as well, in our opinion, the use of brachial access dramatically increases the duration of the intervention, as well as the time of fluoroscopy, thereby increasing the X-ray dose. In addition, using brachial access dramatically increases the risk of developing local complications at the puncture site, including brachial artery thrombosis with the development of subsequent limb ischemia. The shortest duration of the procedure is achieved precisely when using the femoral access. Thus, in our observations, when using access through the right femoral artery, the average duration of fluoroscopy was 3 minutes 10 seconds, and the total duration of intervention in 90% of observations did not exceed 15 minutes. This is possible with the use of modern catheters, for which it is not required to form a loop in the aorta with the help of the Voltman maneuver. Moreover, if it is impossible to use femoral access (for example, in patients with occlusive-stenotic lesions of the femoral and external iliac arteries), in our opinion, it would be more appropriate to use radial access. Until now, the question of the expediency of the application is debatable UAE in patients with submucosal and subserous localization of nodes, since in such situations hysteroresection or laparoscopic myomectomy is possible. Being the main proponents of endoscopic surgery and innovators on a number of issues in this area, we can say that UAE expands the possibilities of endoscopic technologies when performing organ-preserving operations and allows to preserve the uterus in those women whose endoscopic access is contraindicated. The question of transcervical myomectomy in submucous fibroids should be solved taking into account the following factors: the length of the uterus on the probe should not exceed 12 cm, and the size of the submucous node should not be more than 5 cm in diameter, while we assign a large role in the technical success to the topographic localization of myomatous nodes. Submucous nodes of type 2, exceeding 5 cm in diameter and located close to the serous lining of the uterus, significantly increase the operational risk (perforation, blood loss, a significant area of surgical trauma, anaesthetic complications, etc.) in patients with multiple uterine fibroids, having indications for hysterectomy, hysteroresection only the submucous node is inappropriate, since the treatment is incomplete. After the UAE, submucous nodes were isolated spontaneously from the uterine cavity in 35.7% (expulsion or discharge in the form of necrotic detritus). A decrease in the volume of submucous nodes by more than 50% was accompanied by their migration into the uterine cavity and the formation of the 1st or 0th types of submucous nodes, which made it possible to perform hysteroresection or mechanical myomectomy in patients with the initial size of fibroids of 12-15 cm in conditions of the lowest risk, without blood loss, with minimal traumatization of the myometrium diameter. We consider it important to emphasize that 47.6% had a trans-cervical myomectomy performed mechanically at various times after the UAE and 15.4% had optimal conditions for performing hysteroresection modeled. According to our data, interstitial nodes with a central or centripetal direction of growth cause a similar clinical picture with submucous uterine fibroids, with the development of menorrhagia and IDA. As a rule, deformation of the uterine cavity and the collapse of the contractile ability of the myometrium occurs when nodes of significant size are reached - over 6-7 cm in diameter. There are no conditions for performing hysteroresection in interstitial fibroids, and with the development of menorrhagia and anemia,

hysterectomy was the main method of treatment . In our observations, the UAE not only leveled the clinical manifestations of uterine fibroids, but in 21% there was an isolation of interstitial nodes into the uterine cavity with the formation of a submucous component, which allowed us to also perform hysteroresection in these patients. Node expulsions or myomectomy after UAE should not be considered as a complication. The decrease in the volume of nodes and their migration towards the uterine cavity should be regarded as the achieved result after the UAE. In all observations, erect myomatous nodes over 10 cm in diameter were noted. We did not perform hysterectomy in any of the examined patients, all patients underwent transcervical myomectomy against the background of complex anti- inflammatory and antibacterial therapy . Infectious complications after UAE in patients with submucous localization of nodes are not uncommon, and in our observations amounted to 2.3%. As a rule, the appearance of the pyometra was caused by a large fixation zone of the myomatous node in the myometrium and the inability to spontaneously stand out from the bed, while the myomatous node giving birth blocked the internal pharynx, which prevented the rehabilitation of the uterus. Most authors using UAE note a low percentage of infectious complications. In most studies, their frequency did not exceed one percent [13, 14, 17, 25, 28]. According to various authors, the development of endomyometritis was in 11% of patients at various times after UAE, in 2% the migration of myomatous nodes into the uterine cavity was accompanied by the development of pyoma [15, 19]. We have developed a monitoring algorithm in which the probability of infectious complications is minimized. When detecting migration of the myomatous node, it is advisable to carry out ultrasound monitoring and monitoring of the nature of vaginal discharge, and at the first signs of infection, anti-inflammatory therapy is necessary. Currently, there are a large number of publications that show that the risk of developing complications of UAE is several times lower than with other options for surgical treatment of uterine fibroids. To date , there are references in the literature devoted to UAE and combining data on more than 100,000 interventions only about 4 deaths, one way or another associated with endovascular surgery. In 2 cases, the cause of death was injection complications, in 2 others - massive pulmonary embolism [18], W. Walker et al. It is believed that these figures are 30 times lower than the mortality rate after hysterectomy (1 in 1600 operations) performed for uterine fibroids [29]. In addition, the improvement of the methodology and tactics of the use of UAE has now allowed to reduce the risk of complications to a minimum. In our studies, complications did not exceed 3.4%. It should be noted that the majority of patients who have undergone UAE develop post- embolization syndrome. Usually its severity is moderate, its most striking symptoms are pain in the lower abdomen and hyperthermia, as a rule, pass within 1-3 days. The development of postembolization syndrome is not a complication of the intervention, it should be considered similarly to the appearance of pain in the area of any postoperative wound. At the same time, the violation of the integrity of the scar occurred even before the start of regular birth activity and had an erased clinical picture; clear symptoms appeared only after the rupture became complete. In connection with the above and according to the observations, the conditions for laparoscopic myomectomy are: zero and 1st type of subserous nodes. Contraindications for performing myomectomy from this access are: type 2 of the subserous node; the size of the uterus exceeding 12 weeks of pregnancy; the presence of multiple interstitial nodes; low (cervical-isthmus) location of the myomatous node, especially coming from the posterior wall. Considering all of the above, for most patients whose subserous nodes have a pronounced interstitial component, the method of choice should be considered UAE. Of course, a contraindication to the UAE is also a uterine

sarcoma. According to Breusenko V. G., Kapranova S. A. et al., correct diagnosis of uterine sarcoma at the preoperative stage is possible if the basic principles of patient selection are observed immediately before the intervention [1, 4]. We consider it important to take into account the clinical course of the disease: rapid growth of fibroids, postmenopausal fibroids, unverified metroragia - all this is the basis for considering the issue of in-depth examination of patients and exclusion of uterine sarcoma. It should be emphasized that the presence of a pronounced concomitant extragenital pathology is not a contraindication for endovascular intervention. Integration UAE allowed us to obtain a stable therapeutic effect in 2 patients who had a myocardial infarction (2 weeks and 6 months ago, respectively), 3 with a history of stroke, 112 patients with hypertension, 89 who had a history of 4 to 8 glandular sections, 33 with diabetes mellitus of the 2nd type 1 with amyloidosis of the kidneys, 3 with a single kidney and lung, etc. At the same time, the use of UAE did not entail the aggravation of somatic disease or complications. Every tenth patient had an UAE performed for emergency indications, due to severe uterine bleeding, i.e. if there were indications for an emergency hysterectomy. Bleeding was stopped in all patients, in the absence of information about the morphological state of the endometrium and endocervix, hysteroscopy and separate diagnostic curettage of the uterine mucosa were performed in the near future after the UAE. In patients with uterine fibroids, a combination of uterine fibroids and adenomyosis, dysfunctional uterine bleeding and blood diseases (leukemia and disease Willebrand) in 98% of cases, endovascular treatment was sufficient. hemostatic effect during UAE is caused by arterial thrombosis of the ascending branches of the uterine arteries, as a result of which the main blood circulation in the uterus becomes collateral, the volume of circulating blood in the uterus decreases by 2 times - as a consequence, uterine bleeding stops immediately at the time of the procedure. This effect has also been successfully used in patients with uterine bleeding caused by oncological diseases. UAE it was performed in inoperable patients with endometrial adenocarcinoma, cervical cancer, bleeding from adenocarcinoma metastasis localized in the parametric region, after pangi- sterectomy. There is a legitimate question about the effect of UAE on ovarian function. In order to exclude the possibility of emboli entering the ovarian stroma in 1.3% of the examined patients, we consciously resorted to changing the technique of UAEscularization of the ovarian arteries proper from one or two sides when they are involved in the blood supply of the myomatous node. At the same time, the introduction of embolization particles was carried out through a microcatheter inserted through a conductive catheter into the peripheral parts of the ovarian arteries, farther than the zone of departure of the arterial branches of the ovary itself, which made it possible to avoid unintentional embolization. In conclusion, I would like to emphasize once again that UAE is an innovative technology in medicine, it is a new look at the problem of treating uterine fibroids and new hopes. The introduction of endovascular surgery into gynecological practice is an absolute breakthrough in the worldview and a new direction that needs to be mastered and implemented.

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PREMATURE OVARIAN INSUFFICIENCY DUE COVID-19: WHAT MECHANISM PLAYS A ROLE?

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Abstract. Today, premature ovarian failure (POF) is one of the most difficult problems of women's health. Relevance. As the main cause of infertility, a decrease in the quality of life of women with POI is a problem that needs special attention. After a confirmed diagnosis, there are currently no methods to restore ovarian function and fertility. The spread of the COVID-19 virus and pandemic-related quarantine measures have led to women's mental health and menstrual irregularities, up to and including amenorrhea. Therefore, it is important to identify risk factors for the development of POI at an earlier stage. Purpose. To evaluate the plasma concentration of KISS1 and BDNF in patients with POI that developed after coronavirus infection. Conclusion. We can say that kisspeptin and BDNF play an important role not only in women's reproductive health, but also in their mental state. Stress due to the coronavirus pandemic, reducing the level of KISS1 and BDNF in the blood can lead to the development of premature ovarian failure. This observation brings important potential insight into the pathogenesis of POI.

Keywords: premature ovarian insufficiency, COVID-19, stress, anxiety, depression, KISS1, BDNF.

Premature ovarian failure (POF) is the cessation of ovarian function before the age of 40 years. This is due to hypogonadism and loss of residual follicles, leading to menstrual irregularities, infertility, and reduced health-related quality of life. The European Society for Human Reproduction and Embryology (ESHRE) suggests the following diagnostic criteria: amenorrhea or oligomenorrhea for at least four months and elevated follicle-stimulating hormone (FSH) > 25 IU/L [14].

In 1942, F. Albright first published the concept of "premature ovarian failure" - a disease that occurs with amenorrhea, low estradiol levels and high levels of FSH [8;10]. But in the 80s of the XX century, 2 concepts appeared: "resistant ovarian syndrome" - a condition when spontaneous restoration of ovulation occurs and "depleted ovary syndrome" - a condition in which ovarian function ceases irreversibly [21]. L. Nelson proposed to return the concept of "premature ovarian failure", as this characterizes this disease more accurately [19].

The prevalence of POI according to various studies ranges from 1 to 3.7% of the female population [2;3;6;11]. The prevalence of POI varies with age and is 1:10,000 in women aged 18–25 years, 1:1,000 in women aged 25–30 years, and 1:100 in the age range of 35–40 years. Epidemiological studies have shown differences in the incidence of POI depending on ethnicity, and it is highest in Caucasian, African American and Hispanic women [7]. According to Khaydarova F.A., Fakhrudinova S.S. (2019), the incidence of POI in Uzbekistan is 2.5%. The average age of women with POI is 31.4±0.5 years [20].

Premature ovarian failure (POF), which causes the onset of early menopause, is characterized by accelerated loss of follicles in the fertile period and premature cessation of ovarian function [5;16;17]. This process has consequences for the entire female body, including

because, in addition to physical changes, it is also characterized by psychological disorders (psychosocial discomfort), which together significantly reduces the quality of life of women with early menopause [5; 16; 18]. The etiopathogenesis of the disease in most cases remains unclear. However, genetic abnormalities, metabolic disorders, autoimmune, iatrogenic procedures, infections or environmental factors are considered to be the main causes of the syndrome. However, only 10% of POI cases could be explained by the known causes mentioned above. Among them, genetic etiology is of great concern. Thus, the study of unknown potential risk factors for the development of POI is important.

During the COVID-19 pandemic the virus itself, as well as the measures taken to reduce its spread, have seriously affected the lives of the world's population. The pandemic has significantly affected the mental health of many people in the population, leading to loneliness, social isolation, financial stress, as well as anxiety and fear of contracting the virus and uncertainty about the future. It is known that periods of stress and psychological distress can affect women's reproductive health. Stressors can affect the hypothalamic-pituitary-gonadal (HPG) axis and can alter the neuromodulator cascade that governs the regulation of gonadotropin-releasing hormone (GnRH) [15]. It has been proven that dysmenorrhea is associated with high levels of stress and emotional instability [1]. But exactly what mechanism develops a violation of the reproductive system after stress and COVID-19 remains unclear. In recent years, attention has been paid to the role of kisspeptin and BDNF.

The discovery of kisspeptin made it possible to take a fresh look at the mechanisms of suppression of the reproductive system due to stress. Recent studies have demonstrated that the suppressive effects of psychosocial stress on the hypothalamus and pituitary gland are mediated by cortisol, which binds to type II glucocorticoid receptors located on the KND neurons of the arcuate nucleus. Impaired secretion of dynorphin and neurokinin B by KND neurons leads to inhibition of kisspeptin synthesis. These changes can suppress the activity of GnRH neurons and inhibit the pulsatile secretion of gonadotropins [4]. Some studies have shown that BDNF expression disorders may be associated with the development of POF. The association between BDNF and follicular function and depletion has been shown in many studies [13]. The release of LH by the paracrine pathway stimulates follicular production of BDNF in granulosa cells, including the NTKR2.T1 receptor. This mechanism, together with the stimulation of the KISS1R receptor by kisspeptin, ensures the survival of oocytes and further development [13]. Czyzyk et al. found lower plasma levels of BDNF in patients with overt POI (FSH > 40 IU/L). Dorfman et al. [12] also showed that in mice with the removed NTRK2 or KISS1R receptor, oocyte decay occurred and, as a result, oocyte cell death. This process caused POI in mice. There is also a positive correlation between the number of mature oocytes and the concentration of follicular fluid BDNF [13]. Gaytan et al. [9], causing abnormal signaling between kisspeptin and the BDNF signaling pathway, caused a progressive loss of all classes of follicles in the ovary, leading to premature menopause. The secretion of gonadotropins initially remained, but then increased, mimicking the hormonal profile of POI. Our study raises the question of whether impaired synthesis and reduced levels of KISS1 and BDNF in post-COVID women may affect ovarian function (POI development).

Materials and research methods. In the period from January 2021 to July 2022 on the basis of the Republican Specialized Medical Center for Endocrinology named after acad. Y.Kh. Turakulova in the department of the "Consultative Polyclinic" examined women 112 women. The

patients were divided into 3 groups. The main group included 52 women (mean age 31.05 ± 1.78 years) who had COVID-19 and had menstrual irregularities that arose after the illness. In comparison group were 28 women (mean age 34.28 ± 2.56 years) with confirmed diagnosis of POI. The control group consisted of 32 healthy women (mean age 28.68 ± 2.1 years, with a regular menstrual cycle, confirmed by the results of hormonal and ultrasound examinations. The DASS-21 questionnaire was conducted, which gives 3 indicators: the degree of stress, depression and anxiety. Laboratory examination of all patients included an assessment of the level of FSH, AMH, KISS1, BDNF in the blood, ultrasound examination.

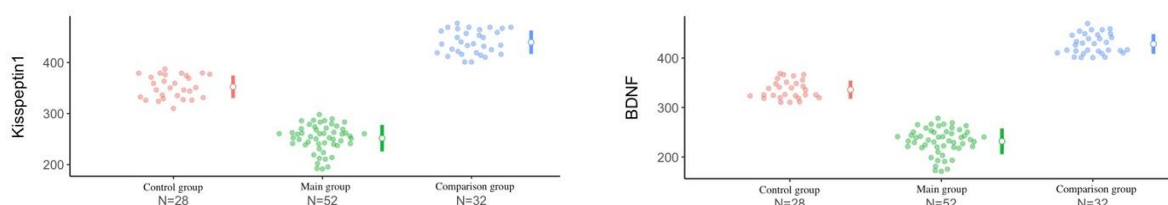
Research results. Blood levels of kisspeptin (HUMAN KISS1) and BDNF (HUMAN BDNF) were determined using an enzyme immunoassay kit ELISA KIT in the laboratory of RSNPMC Endocrinology. Statistical analysis was carried out using Minitab 14. In the main group, blood sampling was performed on any day against the background of amenorrhea, and in the control group, the examination was carried out in the follicular phase (on the 3-5th day of MC).

Table 1.

Clinical and laboratory data of examination of women of the main and control groups.

Indicators	Main group n=52	Control group n=32	Comparison group n=28
Age	31 ± 1.78	28.6 ± 2.1	34.28 ± 2.56
DASS-21: Stress (score)	29.90 ± 0.79	9.65 ± 0.64	12.07 ± 0.64
DASS-21: Anxiety (score)	17.44 ± 0.54	5.31 ± 0.47	6.32 ± 0.43
DASS-21: Depression (score)	23.42 ± 0.71	6.09 ± 0.57	11.92 ± 0.61
FSH (mIU/ml)	79.61 ± 11.89	6.3 ± 0.78	70.82 ± 12.85
KISS1 (pg/ml)	251.69 ± 7.27	439.90 ± 8.32	352.50 ± 8.61
BDNF (pg/ml)	231.82 ± 7.3	428.59 ± 7.22	336.15 ± 7.12

In the POI group, the level of kisspeptin was lower (251.69 ± 7.27 pg/ml, $p < 0.05$) than in healthy women (439.90 ± 8.32 pg/ml, $p < 0.05$) and in comparison group (352.50 ± 8.61 pg/ml, $p < 0.05$). The BDNF concentration was also lower in the first group (231.82 ± 7.3 pg/ml, $p < 0.05$) than in healthy women (428.59 ± 7.22 pg/ml, $p < 0.05$) and in comparison group (336.15 ± 7.12 pg/ml, $p < 0.05$).



Picture 1. Comparison of serum levels of kisspeptin and BDNF in patients with POI due to COVID-19, comparison and control groups.

Blood levels of KISS1 and BDNF are negatively correlated with stress severity. The level of kisspeptin and BDNF depended on the severity of stress and anxiety (against the background of a previous coronavirus infection). By questionnaire "DASS-21" the level of stress, anxiety and depression in points were higher in the main group (in women with POI who had COVID-19), than in other 2 groups. This showed that stress, anxiety and depression lead to deficiency of KISS1 and BDNF, and this in turn leads to dysregulation of the HTH axis leading to the development of POI.

Conclusion. The study of the features of the stress response of the reproductive system, as the basics of the formation of persistent endocrine disorders, as well as the continued search for effective methods for correcting stress-dependent menstrual disorders remain highly relevant. Thus, the pathogenesis of premature ovarian failure in women of reproductive age after coronavirus infection and stress remains not fully understood. The presented data of the study show the relationship of kisspeptin and neurotrophic brain factor with the secretion of GnRH by the hypothalamus, the production of gonadotropins by the pituitary gland and steroidogenesis in the ovaries suggest the importance of these hypothalamic markers in the pathogenesis of POI caused by stress and COVID. In this regard, it is very important to study the relationship between KISS1 and BDNF in women of reproductive age. With the results obtained, we hoped to open a new area of research into the action of KISS1 and BDNF in the pathogenesis of premature ovarian failure.

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EFFECT OF FEEDING IN DIFFERENT WAYS ON THE GROWTH, DEVELOPMENT AND GRAIN YIELD OF CORN VARIETIES AND HYBRIDS

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Abstract. *The article is devoted to the procedure of determining agricultural technology of growing corn varieties and hybrids as the main repeated crop in the soil and climate conditions on irrigated lands of Bukhara region.*

Keywords: *main crop, repeated crop, corn, variety, hybrid, root and leaf feeding in different ways, power of silicon.*

This dissertation is based on the implementation of the tasks defined in the decree of the President of the Republic of February 26, 2021 "On measures for the implementation of the tasks defined in the strategy of the development of agriculture of the Republic of Uzbekistan for 2020-2030 in 2021" and other regulatory and legal documents related to this activity. research serves to a certain extent.

Corn is grown on 37% of the United States and 21% of the People's Republic of China, and these countries account for the world's largest corn production. 5 million annually in 27 countries of the European Union. per hectare of corn is planted for silage.

As a result of the continuous increase in the yield of corn for grain and silage in world agriculture, the creation of new hybrids and varieties, the rapid introduction of their production, and the improvement of grain and silage technologies, in recent years, ordinary hybrids of corn are grown mainly for grain and silage mass in the countries of the world. Planting of new hybrids and agrotechnics of their cultivation are carried out taking into account the soil and climate conditions of the region.

In this era, when the market economy is rapidly developing, in order to improve the supply of the country's population with food products, including livestock products, a number of decisions by the President of the Republic of Uzbekistan and the government of the Republic of Uzbekistan on the development of animal husbandry, the organization of farms specializing in animal husbandry, and the creation of a solid food base for livestock accepted.

Relevance and necessity of the topic. Maize is one of the main crops in world agriculture. Among grain crops, special attention is paid to the cultivation of corn. Along with mineral fertilizers, the application of a mixture of various ecologically clean biologically active substances by suspending them from plant leaves is becoming the main method of feeding in corn cultivation.

Mostly corn is grown in USA and China, and these countries account for 37% and 21% of world corn production respectively. Annually 5 million per hectare of corn is planted for silage in 27 countries of European Union.

Because of continuous increase in the yield of corn for grain and silage in world of agriculture, the creation of new hybrids and varieties, the rapid introduction of their production and the improvement of grain and silage technologies ordinary hybrids of corn are grown mainly

for grain and silage mass in many countries. The planting rate of new hybrids, the thickness of the bush and their agricultural technologies were carried out taking into account the soil and climate conditions of the region.

By taking into account the purpose of planting and its use in certain soil and climate conditions, the introduction of innovative technologies into the field of plant science, the use of mineral fertilizers at a high rate, the creation of new high-yielding varieties and hybrids of corn, the implementation of new methods of cultivation and continuous scientific research on determining the optimal nutrition of the plant are required to be studied.

Leading countries such as the USA, China, India, Canada, France, Germany, which grow the most corn, are getting a high and quality corn harvest due to the use of a mixture of various environmentally friendly biologically active substances from plant leaves along with mineral fertilizers.

Relevance and necessity of the topic of research work. Maize is one of the main crops in the world of agriculture. Among grain crops, special attention is paid to the cultivation of corn. According to the World Trade Organization, the demand for corn grain used for consumption in the countries of the world is increasing by 1.6-1.8% per year. Mineral fertilizers are the main tool in corn cultivation. It has been proven in the world experience that there is no possibility of obtaining a high-quality crop without mineral fertilizers. Leading countries such as the USA, China, India, Canada, France and Germany which grow the biggest amount of corn are getting a high-quality corn crop due to the effective use of mineral fertilizers.

It is essential to determine the effect of feeding, growing and developing varieties of grain yield maize and its hybrids in different methods in the condition of irrigated lands of Bukhara region during the spring (main) and repeated (summer sowing) planting periods of newly created varieties and hybrids of corn.

Different varieties and hybrids of corn during the growing season demands different requirements for light, moisture and other external factors. Different hybrids and varieties have their own growth and development speed. They require certain compatibility in terms of nutrition because of their sharp differences in height, root system development and other morpho-biological characteristics

The purpose of the study is selection of suitable varieties and hybrids of corn for the soil-climatic conditions of Bukhara region, as well as giving recommendations by improving and introducing some elements of the technology of feeding (root and leaf) in different ways, when they are grown as a main and repeated crop.

The object of the research is different planting periods of corn varieties, namely, in Uzbekistan 300 MV (control), Termo, Uzbekistan 400 DR, Moldavsky 215 AMV, Maxima, and Donana G'1 Borja G'1 (control), Miami G'1, Sagunto G'1, P 1241 G'1 hybrids (as main and repeated crops), root and foliar feeding methods were selected.

The subject of the research is the germination, growth, development, formation of leaves, stalks, pods and grains, grain quality and yield, when corn varieties and hybrids are grown in different growing periods and feeding methods.

Research methods. The research work is conducted based on methods of the manuals such as Methodological recommendations for conducting field experiments with corn (Dnepropetrovsk, 1980), Methodology of field experiments for the study of agrotechnical practices for the cultivation of corn and Methodology of the state variety testing of agricultural crops.

The statistical analysis of research results is carried out by using manual which is Field experiment methodology by B.A. Dospheov through dispersion method on the basis of Excel 2010 and Statistisa 7.0 for Windows computer programs.

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FUNGI OF THE GENUS PAECILOMYCES AND THEIR ROLE IN DEVELOPMENT ECHINOCOCCOSIS

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Abstract. *Nazyrova et al. (1999) showed that various forms of fungi, the specific, generic affiliation of which was not established by the authors, were often found in echinococci from operated patients, and the cellular reaction of the host tissue surrounding the parasite depended on their presence. Materials and methods of research. The methods of helminthological, morphological, hematological, bacteriological, biochemical, immunological and serological studies were used in the work. Echinococcal fluid from 105 animals of various species (sheep, cattle, pigs, horses, camels, goats) was examined for the presence of fungi of the genus Paecilomyces and in all cases, spherules of representatives of the genus Paecilomyces were detected. In all animals, spherules of a fungus of the genus Paecilomyces were also detected in the blood. Their number in the blood and in the echinococcal fluid was calculated, the correlation dependence of the concentration of fungal elements in the blood and fluid or the contents of parasite cysts was established.*

Keywords: *research results and their discussion. The results of studying larval echinococcus, microbiology of echinococcal fluid, properties of microorganisms isolated from echinococcal fluid, morphological modification of the parasite, histological structure of the walls allow us to draw the following conclusions.*

Echinococcal fluid from 105 animals of various species (sheep, cattle, pigs, horses, camels, goats) was examined for the presence of fungi of the genus Paecilomyces and in all cases, spherules of representatives of the genus Paecilomyces were detected. In all animals, spherules of a fungus of the genus Paecilomyces were also detected in the blood. Their number in the blood and in the echinococcal fluid was calculated, the correlation dependence of the concentration of fungal elements in the blood and fluid or the contents of parasite cysts was established. Research results and their discussion. The results of studying larval echinococcus, microbiology of echinococcal fluid, properties of microorganisms isolated from echinococcal fluid, morphological modification of the parasite, histological structure of the walls allow us to draw the following conclusions. Contrary to the claims of most researchers, we found that echinococcal fluid in 74% of cases contains microbial flora. At the same time, as evidenced by histological studies of the shells of the parasite and the walls of the capsule of echinococcal bladders, it can also be in the echinococcal fluid of a fully viable parasite, just as bacteriologically sterile echinococcal fluid can be contained in echinococcal bladders with dystrophically altered and even dead membranes. Consequently, even the necrosis of the echinococcal bladder does not always cause infection of the echinococcal

fluid, and not altered, viable shells of echinococcus are not an obstacle to the penetration of infection into the parasite. Most often we found mixed microflora in the echinococcal fluid, half as often – pure monoculture. Thus, all microbes found in echinococcal fluid belong to the so-called pyogenic microflora. In this paper, we did not set the task to find out the causes and ways of penetration of microbes into the contents of the echinococcal bladder, but we can still note that the bacteriological analysis of fluid samples of echinococcal bladders from the same animal in cases of multiple echinococcosis indicates that infection of the contents of the echinococcal bladder depends not only on the condition of the parasite shells, not only from the presence of an infected focus in the body of the affected animal, and not even from a combination of both of these factors. For example, in many samples of echinococcal fluid taken from different bladders parasitized by the same animal, different microbial flora was detected. Consequently, not only the condition of the parasite itself and the presence of infection in the host's body causes the penetration of infection into the echinococcal fluid. Apparently, there are some other conditions, but not known to us, that influence this process. As expected, a large number of various free amino acids were detected in the echinococcal fluid with different quantitative content of them in individual samples. As can be seen from Tables 1-2, there was some qualitative, and especially quantitative difference in the amino acid composition of echinococcal fluid in sheep with echinococcosis and those affected by echinococcosis in the experiment.

Some quantitative differences in the amino acid composition of the echinococcal fluid of various morphological modifications have been established: for example, the echinococcal fluid of *E. acephalo-cys-ticus*, in comparison with other modifications of the parasite, contains more cystine, glutamic acid, methionine, valine, and tryptophan, in the fluid of *E. veterinorum* – more histidine, arginine and aspartic acid. Microorganisms have a significant effect on the amino acid composition of the echinococcal fluid. In infected echinococcal fluid, the amount of histidine, arginine, glycine, threonine and phenylalanine is increased, in bacteriologically sterile – glutamic acid. H. Mirkhalimov (1985), Sh.M. Mukhitdinov (1990) N.M. Matchanov et al. (2004) and other researchers claim that different microorganisms do not consume the same amount of amino acids in the course of their vital activity. Therefore, it is not surprising that the amino acid composition of the echinococcal fluid is to a certain extent determined by the composition of the microbial flora contained in it. This dependence is particularly evident in the study of echinococcal fluid samples containing the most pathogenic strains. It is very significant that viable echinococcal bladders have the smallest size, the largest are dead. This is explained by the different age of the parasites, that is, the duration of the period from the beginning of their development to death. As micrometry has shown, in the process of dystrophy, the chitin shell becomes much thicker, and with the necrosis of the parasite, its thickness increases several times and therefore it can serve to some extent as a criterion for the viability of the echinococcal bladder. The dystrophic process in the shells of echinococcus, as well as complete necrosis, to a certain extent depends on the nature of the microflora contained in it. For example, out of 24 echinococcal bladders, in the contents of which the most pathogenic strains of staphylococci were found, 16 had complete necrosis of the membranes during histological examination, 7 had severe dystrophy of them with foci of necrosis and only in one bladder the parasite shells did not change significantly. A manifestation of the local tissue reaction of the body to the introduction of an echinococcal embryo is the formation of a so-called carrier capsule around it, the structure of which depends on many reasons emanating from both the parasite itself and the host organism. The peculiarities of the local tissue reaction,

of course, to some extent depend primarily on the spheres of the fungus genus *Paecilomyces* and on the properties of the tissues themselves, as well as on the organ in which the parasite is localized and its capsule is formed. For example, of the 22 echinococcal bladders found in the liver, 18 had a necrotic reaction in the carrier capsule, whereas when localized in the lungs, 50 out of 78 had a necrotic reaction. The granulation and fibrous reaction in the carrier capsule is expressed approximately equally in the localization of parasites, both in the lungs and in the liver. Apparently, the structure of the carrier capsule depends on the characteristics of both the parasite and the host organism, as well as the parasitocenosis, in the center of which there are mushrooms. The shells of echinococcus and the capsule developing around them form a so-called echinococcal cyst, but the pathological process caused by it in the affected organ is not limited, but spreads to adjacent areas of the organ, causing significant structural changes in them. When the parasite is localized in the lungs, fibrosis of the lung tissue develops in a large area around the capsule.

In it, the lumen of the alveoli is not visible, the small bronchi are compressed and as a result of scarring changes, in which the bronchial wall is often involved, its traction occurs with the formation of bronchiectasis. General anemia of the affected areas of lung tissue is characteristic. All these changes gradually decrease as they move away from the capsule wall. Thus, there is undoubtedly a constant and multilateral relationship between the state of the parasite, the nature of its contents and the structure of the carrier capsule, which determines the peculiarities of the course of the pathological process in each case. Microbiological characteristics and amino acid composition of echinococcal fluid are of particular importance in this regard, taking into account the constant companions of echinococcus fungi of the genus *Paecilomyces*.

Hyaluronidase in fungi of the genus *Paecilomyces* from echinococci parasitized in the lungs of patients. We have found that echinococcosis of the lungs is often accompanied by *Paecilomyces* infection. With such combined diseases, we found for the first time that the vegetative form of the fungus, hyphae with mycelium, parasitizes in the echinococcal capsule. Apparently, fungi of the genus *Paecilomyces* perceive the chitinous shell of echinococcus and the fibrous capsule as soil in the surrounding nature, where the vegetative form of the fungus is widespread. The complication of echinococcosis with *Paecilomyces* infection has become an acute problem in surgery and veterinary medicine. The term "complication of echinococcosis with *Paecilomyces* infection" appeared. 35 lambs were taken under the experiment, which were infected with echinococcal eggs taken from donor dogs, 5 lambs with *Centronosis*, 5 with ovarian cysticercosis, 5 with alveococcosis, 5 with *Paecilomyces* infection, infected with material from patients and 5 lambs made up the control group. Before infection, pulse, respiratory movements, blood tests (leucoformula and ESR), determination of hemoglobin, sugar, phospholipids, protein and immunoglobulins were performed three times in lambs. Then the same studies were conducted every other day, on the 5th day and every 10 days. The lambs received 5,000 units of eggs inside. The eggs were asked once. Control and infected, distributed according to the principle of analogues. We studied the change in the concentration of phospholipids in experimental echinococcosis of lambs in combination with *Paecilomyces* infection. We have established the following results for the first time. Lambs who received antibiotics for a long time and did not take antifungal drugs were ill, cardiac symptoms appeared, fatigue, decreased motor activity, shortness of breath. There were toxic symptoms of heart damage. The general condition of the infected lambs was more severe compared to the control ones. The general condition of the infected lambs was more severe compared to the control ones. After a single infection with helminth eggs, large focal infiltrates of lymphocytes formed in the myocardium of

the heart, and later fibroblast proliferation occurred. Later, pronounced changes in myocardial cardiomyocytes were found, characterized by swelling and fragmentation of myofibrils. Significant destructive changes were found in the mitochondria, they were manifested by the destruction of the outer membrane, the disorganization of the crist. This explains the increase in phospholipids in the initial stage of the disease. However, after a month, structural changes in cardiomyocytes became less pronounced, which indicates compensatory functions of the body. From the general clinical indicators, persistent anemia was observed, in the leukocyte formula, along with monocytosis, lymphocytosis and eosinophilia were observed, ESR was within normal limits. As for the biochemical parameters, the total serum phospholipids were significantly increased in infected lambs, compared with control ones. Investigating the dynamics of the picture of the protein composition of blood in echinococcosis, pecilomycosis, cysticercosis, alveococcosis, it was found that the first contact of invasive larvae of helminths and spheres of fungi of pecilomyces to host tissues caused changes in the spectrum of blood proteins. The decrease in total protein was due to albumins and gammaglobulins, which indicates the suppression of protective humoral factors. Subsequently, a significant decrease and a return to the initial level was established. This is due to the mobilization of nonspecific gamma globulins, and with the growth of parasites, oppression occurs. Repeated increase is associated with the formation of specific gammaglobulins. Cytotoxins, which are products of tissue decay and cause the development of autoallergia, play a great role in the development of the pathological process in the tissues of the heart with helminthiasis. These observations allow us to conclude that with many helminthiasis complicated by pecilomycosis, morphological changes develop in the heart muscle of animals regardless of the migration path of larvae and the localization of helminths. The morphological picture in the heart during invasion is nonspecific and serves as a manifestation of allergic myocarditis, accompanied by alteration, necrosis of the walls of blood vessels and myofibrils, eosinophilic infiltration of tissue and degeneration of cardiomyocytes. According to the degree of myocardial damage, it significantly affects the severity of clinical manifestations and the outcome of diseases.

Conclusions

1. Pathological conditions of the lungs during therapy with anthelmintic drugs occur with an inflammatory reaction in this organ. At the same time, morphological manifestations are stereotypical in nature with a predominance of the reaction of the vessels of the microcircular bed and the formation of exudate. As a rule, the inflammatory reaction in the lungs is focal in nature and is associated with bronchitis. In addition, the consequence of acute venous fullness may be dystrophic and necrotic changes in lung tissue, as in the appointment of therapeutic doses of mebendazole, albendazole and increased doses of furazolidone. herefore, in the treatment of parasitic diseases, homeopathic preparations such as todikamp, chablin, chablin SK-1, irillen, obtained from various medicinal raw materials, were used. Homeopathic medicines began to attract the attention of surgeons and parasitologists. Structural changes that occur around a viable echinococcal bladder are not limited to the formation of a capsule, but also spread to the tissues adjacent to it.
2. Some quantitative differences in the amino acid composition of the echinococcal fluid of various morphological modifications have been established: for example, the echinococcal fluid of *E. acephalo-cys-ticus*, in comparison with other modifications of the parasite, contains

more cystine, glutamic acid, methionine, valine, and tryptophan, in the fluid of *E. veterinorum* – more histidine, arginine and aspartic acid.

3. Microorganisms have a significant effect on the amino acid composition of echinococcal fluid. In infected echinococcal fluid, the amount of histidine, arginine, glycine, threonine and phenylalanine is significantly increased, in bacteriologically sterile – glutamic acid. The microbiological characteristics and amino acid composition of the echinococcal fluid are of particular importance in this regard, taking into account the constant companions of the echinococcus of fungi of the genus *Paecilomyces*.

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BARLEY (*HORDIUM L*) USAGE, HISTORY, SYSTEMATICS, MORPHOLOGICAL FEATURES AND DEVELOPMENT PHASES

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Abstract. *In this thesis, the importance of the barley crop belonging to the group of spiked grain crops in the national economy, the centers of origin, the cultivated area in the world countries and Uzbekistan, the average productivity indicators and the total yield, as well as the systematics of this crop, the general morphobiological valuable economic signs and the duration of the development periods are analyzed.*

Keywords: *barley, food, cereal, fodder, productivity, cultivated area, systematics, morphology, development periods.*



USAGE

Barley is a valuable cereal used in the food industry and as a valuable feed for animals. Barley grains are obtained from barley grain – barley, and barley differing in nutritional value and good digestibility.

The value of a crop is estimated by its valuable biological qualities, like early maturity, which makes it possible to cultivate it in northern areas. The crop is tolerant to drought and salt, which makes it possible to use the crop in harsh environmental conditions.

Content of "crude protein" in grain fluctuates from 7 to 25%. The embryo contains 26-36% of protein, 8-14% – in the endosperm, and 7-10% – in the shells, and in the biomass in the phase of earing – 1.8-3.5%. The protein fraction is heterogeneous: albumin 7.5-28.8%, globulins 7-21.9%, hordeins 15.6-46.4%, glutelins 18-47.5%, non-protein nitrogenous substances 7.5-16.9%. The average content of amino acids in the total protein of barley grain is: lysine 3.35%, histidine 2.09, arginine 4.37, aspartic acid 27.35, proline 12.32, cystine 1.17, glycine 3.81, alanine 4.10, valine 4.97, methionine 2.57, isoleucine 3.61, leucine 6.53, tyrosine 2.52, phenylalanine 5.24.

The biological value of barley protein is low 51.2%, compared with oat – 83.4% and wheat – 59.9%. The carbohydrate content is 44 - 56%, the main part is starch. This contributes to the quality of the beer. In addition to starch, there are hemicellulose, cellulose, dextrans and pectin substances. The content of oil (lipids) is 2.70 - 3.30%. The grain also contains enzymes, vitamins – thiamine, riboflavin, nicotinic acid, carotene, and tocopherol.

The quality of the grain depends on the degree of flaking of the grain. Since barley has a filmy grain, it first separates the flower florets and partially the outer shells and germ, which leads to a decrease in the quality of the grain.

HISTORY

N.I.Vavilov and other scientists established the following centers of origin of barley:

1. Ethiopian (Abyssinian) – there are all the various forms of double-row awned, six-row barley and bare barley.
2. East Asian – (China, Korea, Japan and areas of Tibet), the barley of this region is stunted, has dense shortened ear, short or awnless spines. There are six-row awned and furcate barley.
3. Persian-Asiatic – the area of wild spontaneous barley, which has different forms on the color of the ear, the length of the spit, the density and the degree of fragility of the ear.
4. Mediterranean – (North Africa - Egypt, Tunisia, Algeria), Palestine, Syria – the grain is large, the forms are resistant to diseases, have an intense waxy coating, is used for food.
5. Central Asian – Tajikistan, Afghanistan, Uzbekistan – rainfed, heat-resistant, drought-resistant, unstable to diseases. This barley is mainly fodder.
6. European – Siberian – resistant to soil acidity, are used widely in brewing.
7. Novosvetsky – North and South America – barley is introduced to this region from other centers, is the “youngest” center of barley origin. In this region, barley is resistant to lodging, early maturing and resistant to smut and rust.

Centers of origin of barley



CENTER OF FORWARD

ASIA

It includes mountainous Turkmenistan, Iran, the Caucasus, Asia Minor and the Arabian Peninsula. Tetraploid wheats, Iranian and Timofeev wheats, various types of rye, barley, and types of chickpeas, lentils, vetch, alfalfa, and sebarga are collected in this gene center.

The beginning of the crop of barley is celebrated in the VIII-VII thousand BC in Front Asia, Iraq, in the Nile Valley, in southern Turkey. In England it is cultivated for 3400, in Denmark – 2650 years BC. In America, barley is a relatively new crop, cultivated since the sixteenth and eighteenth centuries AD.

Barley is a common crop, cultivated in many parts of the world. According to the FAO in 2019, the sown area, yield and gross production of barley are presented in Table 1.

MEDITERRANEAN CENTER

It includes Egypt, Syria, Palestine, Greece, and Italy. This center is an ancient genetic center of plant science.

This center is durum wheat, monograin, bigrain, turgidum, polish, emmer, spelled wheat, barley, oat, grain-legume, lentil, ancient lupins, large-seeded flax, safflower, sugar and Khuraki is the homeland of beets, olives, grapes, laurel and other plants.

Table 1.

Sown area, yield and barley grain production (FAO data for 2022)

Country	Sown area, 000 ha	Productivity, centner / ha	Gross production, 000 tons
In the world	63,8	21.2	158,979,610 tons
Argentina	1,256	40.7	5,117
Australia	4,436	19.8	8,818
Canada	2,727	38.1	10,382
China	2,600	34.6	9,000
Czech Republic	3,489	45.7	15,937
Kazakhstan	2,976	12.8	3,830
Mexico	2,969	20.0	59,443
Russia	8,536	6.7	2,400
Ukraine	3,233	23.3	75,616
United States	8,830	41.8	36,918
Uzbekistan	91.9	19.5	183,340

Systematics. Genus – *Hordeum* has two subgeneruses: 1. *Hordeum*-large-seed barley, including cultivated and wild species, and 2. *Hordeastrum*-barley grasses, having small grains.

The first subgenus is divided into *H. vulgare* L. and *H. spontaneum* C. Koch. *H. Vulgare* – common barley has multi-row and double-row forms. Each of them has varieties that have membranous and bare grains.

Cultivated barley – annual plant, stem height is 70–90 cm and thickness is up to 3 mm, straight, hollow. Vaginas of leaves and plates are usually bare, rarely haired, the tongue is short, the ears are large, curved, that’s why is very different from other grains. The inflorescence is the elbow, and the segments of the stem rod do not disintegrate when mature, and they are strong, straight, and long. On each ledge of the spike stem there are three spikelets with one flower, of which all three are fertile – multi-row barley or only one middle spikelet-barley is rowed. In

double-stranded barley side spikelets are fruitless. Each spikelet has two spikelet florets, narrow, up to 1 mm, less often wide – more than 1 mm, young with long or short hairs. There are two flowering florets; the outer florets are convex, five-nerve, passing into a serrated or smooth awn. Less often, awnings are absent and go into three-blade appendages – furcats. The inner floral florets are two-keeled, covered at the base with short or long hairs. The color of the films can be different – light yellow, brown, purple, gray, and black. The color of the ear and spines may vary in shades and intensity. The external and internal floral florets tend to grow together with the grain (membranous barley), less often they do not grow together (bare barley). The kernels are large, oblong, with a groove on the ventral side, of different colors — yellow, gray, green, purple, and black. The aleuronic layer in barley, unlike other cereals with one row of cells, consists of several rows of cells. Plants are self-pollinated, and diploid $2n = 14$.

Varieties of cultivated multi-row barley – afganicum, anomalum, atratum, atricornutum, atrispicatum, atrum, chinense, dundar, nigripallidum, nigrum, pallidum, parallelum, pavonicum, pyramidatum and others. 57 species are described in total. Varieties of multi-row barley are coeleste, acachicum, addisabebe, aethiopicum, amaricum and others. 57 species are described as well.

Varieties of cultivated double-rows barley are abyssinicum, africanum, asmaricum, braunii, breve, contractum, dubium, erectum, glabrispicatum, medicum, nigricans, persicum, rarum, rubrum and others. 64 types are described. Varieties of double rowing barley are nudum, colonicum, decorticatedum, duplialbum, nigrinudum, viride and others. 38 species are described.

MORPHOLOGICAL FEATURES

Root. Barley has a fibrous root system, consisting of primary – embryonic and secondary – node roots. Embryonic roots begin to develop in the embryo grain, and secondary – later from the underground stem node. The roots absorb water and minerals from the soil and are involved in the metabolism of the whole plant. Depending on growing conditions, embryonic roots die off quickly or grow to the end of the growing season. Usually, under conditions of water deficiency, embryonic roots develop better and penetrate into the soil up to 1 m, and secondary roots do not develop in such conditions. In conditions of good water availability, secondary roots develop well. The primary and secondary roots are covered with numerous short root hairs, sucking water and minerals. Barley develops several embryonic roots. In two-row barley germ roots are more than multi-row. Scientists associate this with seed size. The growth and development of the roots goes on differently if the growing conditions are different. In conditions of dry area, there is a rapid growth of the roots to the heading. Under irrigation, the root and vegetative mass increases faster from heading to full maturity.

Tillering node and stem. Primary roots are separated from secondary by epicotyl – this is the lower part of the embryo that is transitional from stem to root. In case of small seed embedding, epicotyl is not pronounced. All shoots are covered with caps, called coleoptile. The coleoptile protects the first leaves of shoots during germination and breaks through the soil crust. The number of shoots depends on the variety, wintering conditions. The stem is a hollow straw, where nodes and internodes alternate. Resistant to lodging varieties in the lower part of the straw have a larger diameter, wide sclerenchymal ring.

All forms of barley have stems from 45 to 160 cm in height, but in the dry areas of Asian part of the world – 15 - 20 cm. The thickness of the stem of the world collection of barley varies

between 1.7 - 6.5 mm. In most varieties, the stem has 5 - 8 nodes. The upper internode is the longest and thinnest, which sometimes causes lodging of the whole plant.

Leaf. The leaf is located alternately on opposite sides of the stem, consists of the vagina and leaf blade. At the junction of the vagina in the leaf plate is a thin film (ligula) tongue adjacent to the stem and protects the stem from the penetration of water and pests between the stem and the vagina. The uvula has a color ranging from light green to violet, and the tongue is 2–5 mm long. At the base of the lamina, horn-shaped ears are formed, reaching each other's ends. The top leaf is flag, it hides the whole ear. The width and length of the leaves differ widely: the length is 8-25 cm, and the width is 4-32 mm. Green leaves are of different intensity. Leaves with respect to the stem are sometimes straight up, and sometimes drooping. The number of leaves is 4-7 pieces.

The features of the anatomical and morphological structure of the leaf are associated with biological properties – cold resistance, drought resistance, productivity, etc. When exposed to low temperature, the mesophyll and epidermis are destroyed. Drought-resistant forms have a small-cell structure, which is characteristic of xerophytes.

Spike. Inflorescence – spike, consisting of a crank stem and spikelets. Spike stem is flat, narrow or wide. Three single-flowered spikelets sit on the ledges of the segments of the hair shaft. The length of the segments of the ear stem is from 2 to 4 mm, so the ears are dense or loose. The density of the spike is determined by the number of segments of the spike stem per 4 cm of the spike length. In wild barley, the segments of the spike stem disintegrate upon maturation.

Spikelet florets are narrow, wide, haired or smooth and often awned. The outer floral florets always have 5 strings. The outer floral florets in the upper part transforms into a serrated or smooth awn. Furkat barley has appendages instead of spikes. Awns play a prominent role in grain filling, and participate in photosynthesis, in the metabolism of parts of the ear. The internal floral florets adjoin the spike stem, have a two keel shape, can be young, and always awnless. Lodicle has a different shape – rounded, trapezoid, leaf-shaped, and different lengths of hairs. If the lodicles are large, there is usually an open type of flowering, and cross-pollination. Barley has a closed flowering type, is a self-pollinator, but there is a lot of information about the open flowering type. Open flowering is observed mainly in small-seed barley. The size of pollen in most species is 34-45 μm.

Grain. Grain is fruit of cereals. Cultivated barley has a length of 7–10 mm, a thickness of 2–3 mm. The 1000 kernel weight is 31 - 52 g. There are new varieties having a weight of 60 - 65 g. The shape of the kernel is rhombic, elongated, and elliptical. The grain is scarious and naked. On the ventral side there is a groove of various depths and widths. The color of the grain in the bare barley is cream, blue, blue, green, brown, black and purple, and black. The main parts of the grain are: the fruit coat (pericarp), the seed coat (sperm), the endosperm and the embryo. Pericarp is formed from the walls of the ovary. The seed coat is folded from the shells of the ovules. Under the seed coat is the aleurone layer. Among the species diversity of barley, species with different thickness of the aleurone layer are described. In the central part of the endosperm are large starch grains. The embryo is located in the lower part of the dorsal side of the grain. It consists of a shield, a bud, closed in a coleoptile and an embryonic root. The number of roots depends on barley species and cultivation conditions. Large-seeded membranous barley in laboratory conditions retain germination for up to 10 years, annual wild-growing – up to 7 years, and the smallest-seeded – up to two years. The study of the species of barley according to this trait shows a great diversity of the rest period and the biological germination of seeds.

DEVELOPMENT PHASES

Shoots. The germination of barley seeds requires heat, water and oxygen. At optimal levels of these factors, shoots appear on the 5th - 7th day. If the heat is not enough, shoots appear on the 15th - 20th day. 48 - 65% of water is required for seed germination in relationship with the dry seeds weight. The germination of barley seeds can be observed at 1 - 3°C, but the optimum is 18 - 25°, and the maximum temperature is 28 - 30°C. Such factors as lack of water, low temperatures, compacted soil, formation of soil crust, excessive moisture, and a large embedment depth have a negative effect on seed germination.

Embryonic roots and germ sprout are formed in the germination period. Germ roots penetrate the soil, and the first leaf, protected by colorless coleoptile, rises to the soil surface. Shoots usually end with the formation of three leaves.

Tillering. With the formation of three leaves a noticeable stem node is formed at the surface of the earth. From this node, secondary, or node roots and additional shoots are formed. The number of shoots formed shows the degree of tillering. Under favorable conditions of cultivation, additional shoots are slightly late behind the main stem and contribute to higher yields. If the tillering is stretched, the shoots of late formation do not carry ears or they do not ripen. The number of shoots per plant can be from 1 to 16 stems, thus forming a bush of various shapes: erect, creeping and intermediate.

Stem elongation. This phase is associated with the expansion of internodes and the formation of a rudimentary spike. Usually, the beginning of the stem elongation begins 4 to 6 weeks after the emergence of shoots. Unfavorable conditions in this phase affect the formation of reproductive organs. The lack of water, nutrition, light will lead to sterility or a decrease in the number of grains.

Heading. The beginning of the phase is marked when 1/3 or 1/5 of the spike appears from the vagina of the upper leaf. In hot, dry weather, the ear may not appear from the leaf vagina. This was observed on rainfed conditions of Uzbekistan in 1980. The duration of the period of seedlings - earing varies in large intervals. It depends on the ecological and geographical conditions and varietal characteristics. On average, barley stands out faster in a long day than in the south in a short day.

Germination-earring period is highly susceptible to external environmental factors, especially temperature and light.

Flowering. Barley is a self-pollinating plant that flowers when the ear is in the vagina of the leaf and the flowering coincides with the earing. In conditions of heat or heavy rains, the flowers are not pollinated and there is empty every other grain, which in rainfed conditions amounted 10 - 15%. There are cases of open flowering and cross-pollination, and it is always associated with adverse weather conditions.

According to F.M. Kuperman, **the vegetation period** is divided into 7 stages of organogenesis.

Table 2

Stages of barley organogenesis

Stage	The degree of differentiation of organs	Phenological phases
I	Stem shoot is not differentiated, the cone of growth in the form of a node with a wide base is 0.25-0.5 mm	Emergence of shoots and tillering

II	The beginning of the differentiation of the growth cone with its slight expansion. Differentiation of rudimentary stem nodes, tightly located in the form of rollers at the soil surface.	Formation of tillering node
III	Elongation of the upper part and differentiation of the lower part of the cone of growth. Ridge stem nodes with internodes are detected. The beginning of the development of leaf rollers	Start of tillering
IV	The appearance of the ear humps is the beginning of the generative period	Complete tillering
V	The beginning of the formation of flowers in spikelets and the laying of spikelet floret.	Complete tillering
VI	Intensive formation of generative organs, clearly visible nodes, giving rise to the development of anthers and pistils.	Stem elongation
VII	Completion of the differentiation of all parts of the spike and individual flowers	Harvesting

Grain maturity. The process of grain maturity takes a long period. Grain formation begins 10 to 15 days after pollination. This period is called milky maturity, in which the grain is green and the humidity is 60-80%.

In waxy maturity, the plant acquires a yellowish color, and the grain is soft, cut with a fingernail. Grain moisture is 25 - 30%. In this phase of ripeness, an important biological process takes place – the grain is separated from the parent plant, the influx of plastic matter stops, the embryo stops growing. Grain acquires a new quality – germination. Waxy maturity can last from environmental conditions of 7 to 15 days. Then comes full maturity, when the grain becomes hard, has the shape, color, size characteristic of the sown variety. In this maturity, the harvest is required to be done urgently, as some varieties shattering down or fall for various reasons. The unfavorable weather during the grain filling period deteriorates all the grain quality indicators – sown, technological, quality and brewing.

The vegetation period is an important biological property, showing the genotypic characteristics of the variety and the environment. The amplitude of the growing season is 55 - 120 days.

The duration of the interphase period flowering-maturation depends on the temperature factor. With increasing temperature, the period is reduced.

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NUTRITIONAL CONTENT OF MULBERRY LEAVES AND JUICINESS OF THE FRUIT

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Abstract. *The purpose of this work is to restore human health through the analysis of the leaves and fruits of the mulberry tree, the study of The Silkworm's nutrient base and natural treatment with the help of Mulberry fruits.*

Keywords: *mulberry, mulberry leaf, cocoon, boiling point, tincture, blood pressure, blood sugar level, dried mulberry, silkworm, nutrient content, amino acids, biophysical traps.*

I. Introduction

Mulberry is one of the most hardy trees that requires very little maintenance. It is known for its juicy, fragrant fruits. China used these leaves to feed silkworms. As a result, the mulberry tree became an important part of the Chinese silk trade. Today we use the leaves in other ways, mainly for food additives and tea leaves. There are three types of mulberry trees – red, white and black. They are named for the color of the fruit. The leaves are very similar with small differences. The benefits of mulberry leaves due to the beneficial properties of mulberry leaves are used in traditional Asian medicine. Most of them have been proven in clinical trials. The main benefits of mulberry leaves are mulberry tree used in traditional Asian medicine to treat diabetes. Therefore, its effectiveness was confirmed in scientific tests. A 2017 study published on PLoS ONE found that mulberry leaf extract is rich in carbohydrates after eating blood glucose II.

LITERATURE REVIEW



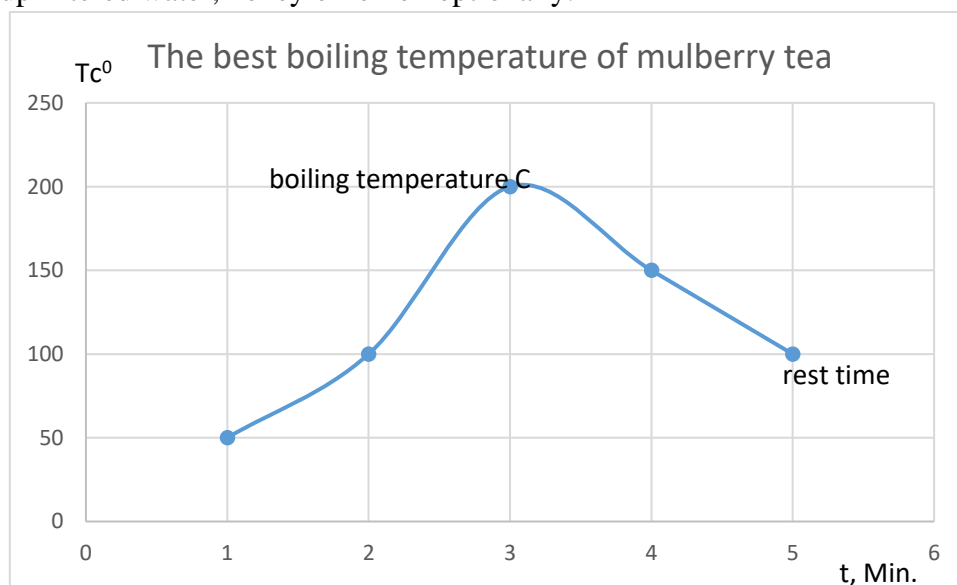
Improve heart health many studies have shown that mulberry leaves can be beneficial for our cardiovascular health. A 2018 study published in the journal *Pharmaceutical Biology* concluded that phenols and flavonoids present in leaves reduce cardiometabolic risks. Another study published in *BioMed Research International* found that these antioxidants work by lowering serum triglycerides, CRP, and LDL levels. [2] [3] it can help reduce obesity mulberry tree leaves have had a great impact in the fight against weight loss and obesity. An animal study published in the *Journal of Experimental Biology and Medicine* showed that mulberry leaf extract works in several channels by reducing obesity and associated complications. This includes improving plasma triglycerides, adipocyte size, lipid peroxidation levels in the liver, and hepatic steatosis. [4] Reducing the risk of chronic diseases the anti-inflammatory properties of Tut are explained by its ability to reduce the risk of chronic diseases. A study published in *Functional Foods* found that mulberry leaf extract helps reduce the effects of inflammatory compounds such as cytokines. This extract can be very effective against chronic conditions and inflammations such as arthritis,

fibrosis, diabetes and cancer. Studies have shown that mulberry extract is dose-dependent, since it is based on a dosage regimen, home alternatives such as mulberry tea can help achieve similar results. [5] chemoprophylaxis potential mulberry leaves have long been considered useful in traditional Chinese medicine for the treatment of chronic diseases. A review published in the Journal of traditional and complementary medicine contains a variety of studies of mulberry extract (including clinical and laboratory tests).

The study found that Mulberry helps in the prevention and treatment of various cancers. To create a better immunity in the East, it is recommended to combine it with drugs. [6] the use of mulberry leaves the leaves of Mulberry are the only food source of silkworms. But they also have a lot to do.

III. RESEARCH METHODOLOGY AND EMPIRICAL ANALYSIS

As mentioned above, mulberry leaves have been used in Asian cultures for centuries due to their healing properties. They are also used for food purposes. Young delicate leaves can be prepared and eaten. You can use it instead of grape leaves in the preparation of caviar tak according to the recipe. It is often used as a food additive in the United States. Another popular way to use mulberry leaves is to brew dried leaves in tea. How to make tea from mulberry leaves? Mulberry leaf tea is very easy to prepare. You just need to brew tea leaves or tea bags in hot water. Tea is made from dried leaves. In the US, you can buy tea from certified plants or order it online. You can easily get tea bags from mulberry leaves. When buying tea, we recommend that you look for organic brands. Tea from mulberry leaves has a light bitter sweet taste. Tea leaves are very easy to prepare by brewing them in hot water. Cooking time: 3 minutes brewing time: 5 minutes preparation 1 teaspoon mulberry tea leaves per 1 cup of boil or, 1 tea bag from mulberry tree leaves, 1 cup filtered water, honey or lemon optionally.



1. Mulberry tea is best brewed with water at a boiling temperature of 160-200 degrees. To do this, boil a glass of water. Let it cool for a minute.

2. Add tea leaves to the kettle and pour hot water. You can also brew a tea bag in a glass of hot water.

3. Let the tea leaves brew for 3-5 minutes. If using a teapot, put the tea in a cup. Your tea is ready! Tea from mulberry leaves is usually taken without additives. However, you can add honey or lemon if desired. If the tea seems too strong to you, try to brew it less the next time. Keep in mind that if you dip it in hot water several times, the tea bag will take less time. Recently appeared

in the American landscape. But it is becoming more and more popular, the leaves of the mulberry tree do not have a single shape even on one tree. Mulberry leaves are heart-shaped or oval with edges and edges. The leaves often have deep blades, the mulberry leaves are rarely symmetrical, the texture can vary slightly between different types of Mulberry. Although it has been part of traditional Chinese medicine for centuries, we do not have long-term studies on the bad effects of mulberry leaves or drinking tea from it. Therefore, we advise you to be careful when taking this tea. Pregnant women and children should avoid drinking tea because there have been no long-term studies on its safety. It should also be borne in mind that mulberry leaves are known to reduce blood sugar. As always, if you are taking any medication, talk to your doctor before including it in your diet. The benefits of mulberry leaf are the same as the positive health effects of Mulberry. The most important advantage of Mulberry fruits is the antipyretic effect. To do this, eat Mulberry. Tea made from the leaves of a mulberry tree has the same effect. Scientific evidence from research at leading medical institutions in the United States, India, France and Asia proves the miracle of the mulberry tree. Dr. Ibrahim Sarajoglu, Dr. Feridun kunak (doctor of Turkish medicinal plants), like experts, talks about the benefits of the leaves of this plant in many places.

IV. Results

The benefits of mulberry leaves are as follows

№	Useful effect of tincture
1	Controls blood pressure and blood sugar
2	Mulberry leaves are a very important factor in the treatment of diabetes
3	Lowers cholesterol to a minimum
4	It is a herb commonly used by liver patients
5	It contains antioxidant substances and helps to remove tumors
6	Mulberry and mulberry leaves, which are used in heart disease, balance rhythm disturbances in the heart, tighten and cleanse the intestines
7	Mulberry fruit and mulberry leaves are very rich in amino acids
8	Calcium, potassium, magnesium, iron and zinc from the point of view of a very rich plant
9	Used in the treatment of bone diseases and bone strengthening
10	Regulates the digestive system, promotes constipation
11	Mulberry Tree Hair Benefits up to the following benefits mulberry leaves are very rich in magnesium, iron and calcium
12	For healthy hair, iron intake should be adequate and balanced. For this reason, mulberry leaves are very useful for a healthy and strong hair structure.
13	The benefits of mulberry leaves for the liver are as follows with the regular use of dry and fresh mulberry leaves they especially protect against liver cancer
14	In addition, it is effective against dumbbells

When to harvest the leaves of a mulberry tree, the timing of harvesting mulberry leaves is very important. As a result of all scientific research, it should be understood that the leaves should be harvested immediately before ripening early spring mulberry leaves should be collected in green. Then the leaves can lose their nutritional value and even become poisonous. To dry mulberry leaves, all fresh vegetables and fruits are dried in the sun at the hottest time. It should be remembered that in places where the fruit is too hot in the direct sun, vegetables can be harmful. Therefore, it should be dried in the ground in the shade, close to the sun. Mulberry leaves can be

eaten fresh and dried. In the same way, you can brew fresh and dried tea, boil fresh mulberry leaves and eat them in the form of a salad. To make tea from fresh mulberry leaves, you must first wash them very well. Take the powder, put the leaves in boiling water and bring to a boil. Then you can eat it. Preparation of dry mulberry tea 1.2 tablespoons of dried mulberry, 2. 4 cups of cold water, a teaspoon of honey to taste, if desired, you can make tea from dry mulberry leaves. Over low heat for 4-10 minutes. Then take it out of the oven. Dry mulberry leaves benefits for human skin mulberry leaves dry, eczema, redness, etc. are very important in the treatment of all skin diseases. Like dried leaves, it has properties that restore the skin, as it has the maximum level of antioxidants. There are several treatments for hair loss. Mulberry leaves are very useful even when they are dry and fresh. Mulberry fresh leaves are very difficult to store, they are kept dry. The use of the leaves of the mulberry tree their leaves are used for several diseases. Compared to black and red, white mulberry leaves (*Morus alba*) are economically more expensive to grow silkworm. In fact, a few years ago, the extensive cultivation of these trees contributed to the development of the silk industry. Today, more than 700 varieties of Mulberry are grown in Japan. Because it is a very hardy flowering plant, farmers have less energy to grow and grow it. Another advantage is the high yield of leaves and fruits with minimal care and care. If a farmer grows mulberry trees to grow silkworms, he can also raise fish, ducks, pigs, and goats. In some regions, thin leaves are eaten as a nutritious vegetable. When collecting leaves and other green teas [7,8]



V. CONCLUSION AND DISCUSSION

The mulberry tree has been revered for many years for its fragrant fruits and nutritious leaves. Although the berries are tasty and rich in many nutrients, the leaves are good for health. What are the leaves of the mulberry tree? The mulberry tree is native to Asia, but is now found in many countries around the world. Mulberry leaves have been used for centuries due to their healing properties, culinary benefits and excellent nutritional composition. Traditionally, it was used to make tea or cooked and added to food. Mulberry leaves do not contain caffeine and tannins. Currently, it is widely used in food additives. The nutritional properties of mulberry leaves are responsible for its health benefits. In addition to the nutrients described above, the leaves also include: [9]

№	Types of vitamins scale of beneficial effect	Types of vitamins scale of beneficial effect
1	A	Essential vitamin for vision and immunity
2	B ₁	For healthy skin, muscles, immunity and nervous system
3	B ₂	For stomach and muscle function
4	B ₆	Essential for nerve function and protein metabolism
5	S	Vitamin is a powerful antioxidant with many important functions in the body

6	Amino acid protein depletion	Amino acid protein depletion
	Calcium for weak bones	Calcium for weak bones

It can be seen from this that it is of great importance to ensure the protection of the mulberry tree from various pest insects, since mulberry leaf is a medicinal plant that benefits not only for the cultivation of sawdust, for the health of humans kyeltruvch. The decision of the president of the Republic of Uzbekistan on additional measures for the development of The Silkworm feed base in the sawmilling network dated 17.01.2020. PQ-4567 No. 1-2, Article 7. In this decision of the president, the fact that the tutzors are one of the current dolbzar issues is in the sawmills, and the further development of the economy of Medicine will have a good economic effect in the prosperous, healthy living of our people. The application of biophysical grips used for sunning is significant in eliminating the enormous damage.

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EFFECTIVENESS OF THE USE OF ENDOVIDEOSURGERY TECHNOLOGIES IN THE TREATMENT AND DIAGNOSIS OF TORSION OF THE GREATER OMENTUM IN CHILDREN

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Abstract. *This article presents the treatment and diagnostic analysis of 12 children with a very rare abdominal hernia. 8 of them had primary sprain, and 4 had secondary sprain. Endovideolaparoscopic resection of appendicitis was performed in 12 children, 1 of them underwent additional appendectomy. Videolaparoscopic resection was performed in 1 patient with greater omentum's cyst. An upper middle laparotomy was performed on a patient with abdominal trauma and conversion was performed. No complications were observed at the site of the operation and in the postoperative period. During the histological examination, signs of gangrenous omentitis were revealed in the greater omentum. Performing operations using endovideolaparoscopic technologies makes it possible to make an accurate diagnosis of the disease, to achieve simultaneous omentum resection and to determine the etiological factors of secondary omentum torsion.*

Keywords: *the greater omentum torsion in children, primary torsion, secondary torsion, surgical treatment, videolaparoscopy.*

Urgency of the problem: Torsion of the greater omentum in children is a rare polyetiological disease in surgical practice, accompanied by clinical symptoms of acute abdominal syndrome. This pathology accounts for 0.01-0.32% of patients undergoing urgent abdominal surgery [1,4,7]. The etiological factors of torsion of the greater omentum found in children and its causes have not been studied clearly yet. Inducing factors for this disease are abdominal adhesion disease, hernias of the anterior abdominal wall, obesity, chronic inflammatory processes in the abdominal cavity, and the producing factors are physical stress, overeating can cause a sudden increase in intra-abdominal pressure or contraction of the muscles of the anterior abdominal wall. [3, 9, 11].

The aim of the study: Since sprain of the large intestine in children is a rare polyetiological disease in surgical practice, our clinical follow-up consisted of a retrospective analysis of children.

Materials and methods of investigation: during 2012-2022, 12 patients were treated with torsion of the greater omentum in children at the Republic Children's Scientific and Practical Center of Minimally Invasive and Endovisual Surgery. It was determined that the age of the patients was from 3 to 18 years. 8 (66.6%) of them were boys and 4 (33.4%) were girls. Based on these analyses, it can be said that boys are more prone to this disease process. "Acute appendicitis?" admitted for examination and treatment with suspicion.

Distribution of patients by age and gender (n-12)

Gender of patients	age of patients					total
	3-5	5-9	9-12	12-15	15-18	
Boys	1	1	2	3	1	8
	8,3%	8,4%	16,6%	25%	8,4%	66,7%
Girls		1	2	-	1	4
		8,4%	16,6%		8,3%	33,3%
total	1	2	4	3	2	12
	8,3%	16,8%	33,2%	25%	16,7%	100

There were 11 children who were urgently referred to the hospital with suspicion of acute appendicitis, and these patients were referred to the hospital between 5 and 72 hours after the onset of the disease and the manifestation of the clinical picture. In most patients, the exact etiological factors causing abdominal pain were not identified when the anamnesis was collected. Only one boy was punched in the abdomen while doing boxing 2 hours before hospitalization. This patient presented with recurrent abdominal pain. Abdominal cyst was detected in 1 patient who presented with abdominal pain, i.e., abdominal cyst was performed during UTT of abdominal organs. All the children who came to the emergency room had different intensity of the clinical picture of abdominal pain, and more pain was observed in the right half of the abdomen and in the epigastric region.

In most cases, pain in the abdomen has a constant character, and sometimes it has an episodic character. In 2 of the patients who applied, it was observed that the signs of exposure to the peritoneum were positive in the right flank area. In addition, pain syndromes were observed in 3 patients, and dyspeptic disorders, i.e. vomiting, nausea, diarrhea were found in them. Body temperature in all patients remained subfebrile $t-37.4^{\circ}\text{C}$ or normal.

The average amount of peripheral leukocytes in the blood ranged from 6.9 to $17.3 \cdot 10^9/l$. Only one patient presented urgently with abdominal pain, and it was found that an infiltrate with a non-structured in the lower abdomen was detected in the abdominal UTT examination. Abdominal UTT examination did not reveal echosonographic pathological changes in all other patients. Urgent operations were performed on 12 children. If the patient has constant pain in the abdomen, signs of exposure to the peritoneum appear during the observation process, and the amount of free fluid in the abdominal cavity is determined during the UTT examination, and signs of infiltration are observed, it is an indication for a diagnostic endovideolaparoscopic procedure. A planned diagnostic endovideolaparoscopic procedure was performed in order to clarify the diagnosis of an abdominal cyst in one patient.

Research results: For endovideolaparoscopic operations, using an 8 mm optical trocar, a trocar was placed in the supraumbilical region, and 5 mm trocars were placed in the suprapubic and left flank region. During endovideolaparoscopic surgery, in many cases, a small amount of serous-hemorrhagic fluid was detected in the pelvic cavity. 720 degree rotation of the large intestine was detected in 10 patients during videoendolaparoscopic surgery. It was observed in a child who received a blow to the abdomen with a 360 degree rotation of the large intestine and a hematoma of the round ligament of the liver. 1 patient with a thin-walled cyst with a diameter of up to 7 cm had a 180 degree twisting of the large intestine. Acute phlegmonous appendicitis combined with 360 degree twisting of the large intestine was found in 1 patient. The parts of twisted omentum are identified in the lower areas of the abdominal cavity or in the right side area,

the longitudinal dimensions are from 3 cm to 7 cm, they are dark red or black, and the necrotic omentum is distinguished from healthy omentum by a clear border.

Monopolar coagulation or Reder's suture was used in the endovideolaparoscopic resection of large intestine torsion in 12 children, and in 1 of them, appendectomy was additionally performed at the site of operation. The greater omentum cyst was resected by videoendolaparoscopic method in 1 patient. It was possible to remove the resected drug from the abdominal cavity by installing a large-sized trocar instead of a 5-mm trocar in the umbilical region. The patient who presented only with abdominal trauma was converted due to total infiltration of the large intestine, and the surgical operation was performed by upper middle laparotomy. There were no complications in the intraoperative and post-operative periods. Inpatient treatment lasted from 5 to 15 days, the average bed rest was 7 days. The results of histological examination revealed signs of gangrenous omentitis due to impaired blood circulation in many cases. The first information about the torsion of the greater omentum was written by Oberst in 1882. The torsion of the greater omentum is divided into primary and secondary types. Primary omentum's torsion is more common in boys. Primary omentum's torsion is more common among children aged 11-15 years. It was found in cases of secondary omentum torsion, omentum cyst, omentum tumor and omentum hematoma. One of the main causes of scoliosis in children is its anatomical structure. One of the other factors is obesity in children. The diagnosis of omentum's sprain is very complex, and in many cases, the diagnosis is made at the site of the operation. When diagnosing a hernia in children, it is necessary to carry out a comparative diagnosis with acute appendicitis and pathological diseases of the small pelvis in girls. Sometimes the pain is observed when eating more than normal, when the pressure in the abdominal cavity increases. Clinical symptoms appear gradually, signs of long-term intoxication are not detected. On palpation of the abdomen, there is light pain in the right half of the abdomen, and in most cases, patients apply 2-4 days after the onset of the disease. On palpation of the abdomen, there is pain in the right half of the abdomen. Muscle tension is not observed. Body temperature in patients is normal or subfebrile. There are no changes in general blood tests at the beginning of the disease, leukocytosis is observed when omentum necrosis and peritonitis develop. During the UTT examination of the abdominal cavity, it is sometimes possible to determine that the fat tissue has increased blood circulation, swelling, and increased hyperechogenicity. In such cases, the videolaparoscopy method plays an important role in identifying acute pathological processes in the abdominal cavity. In the literature, due to the insufficient conservative treatment of herniated disc in patients, the development of abscesses in the abdominal cavity leads to the appearance of peritoneal adhesions. Endovideolaparoscopy technologies are one of the effective methods of diagnosis and treatment of torsion in children.

Conclusions:

1. Torsion of the greater omentum in children occurs in rare cases, and its clinical symptoms are often similar to clinical symptoms of acute appendicitis.
2. Due to the lack of specific symptoms of hernia in children, UTT examination gives very little information, it is appropriate to use endoscopic laparoscopy in the diagnosis of hernia.
3. In recent years, intensive use of endoscopic laparoscopy in clinical practice makes it possible to timely diagnose torsion of the greater omentum in children.
4. Endoscopic laparoscopy is not only used for the diagnosis of torsion of the greater omentum in children, but it is considered one of the high-tech, low-injury surgical procedures for performing resection of the destructively changed intestine and eliminating etiological factors.

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RESISTANCE OF WINTER SOFT WHEAT TO EXTERNAL ENVIRONMENTAL FACTORS AND GRAIN QUALITY INDICATORS

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Abstract. *The article provides information about the resistance of the studied specimens to diseases and adverse environmental conditions. Among the 19 constant lines selected in the experiment, 13 lines were resistant to yellow and leaf rust.*

Keywords: *winter soft wheat, indicators, grain quality, environmental factors.*

The study of the varieties and samples of the world collection shows that great achievements can be achieved in the future if scientifically based advanced methods are applied and used in the selection process of geographically and genetically distant, diverse initial sources [1].

It is commendable that breeding scientists are solving problems such as supplying ecologically clean food products to the growing population and supplying industry with raw materials while creating abundant, early varieties.

The new variety being created is required to have a better result than the existing varieties in all its parameters. Taking this into account, it is important to evaluate the hybrid lines that have reached an unchanging constant state during the selection process according to various quality indicators and to select lines with high productivity.

A competitive test of varieties of winter soft wheat, created at the Scientific Research Institute of Cereals and Legumes and introduced in Krasnodar Territory, was carried out, and it was possible to select 6 lines with high yield and 5 lines with high breadiness [3]. At the Research Institute of Cereals and Legumes, Uzbek-25, Aziz, Yogdu, Qadr, Navbakhor, Nadir, Asr Chilgisi and other early varieties with a yield potential of 100-110 centners, grain quality corresponding to class I-II, natural stress new varieties resistant to factors were created and most of them were included in the State Register for planting from 2022, the seed production system was widely introduced[2,4].

The conducted experiments were carried out in the "Central" field experiment area of the Research Institute of Cereals and Leguminous Crops, and 21 options were placed in 4 returns. The area of each option is 25 m². The soil of the experimental field is grassy soil, the water table is 1.5-2 m.

The goal of the scientific work is to create new domestic wheat varieties with the highest performance according to the results of the competitive variety test, resistant to unfavorable factors of the external environment, resistant to rust diseases, productive, baking properties, high gluten and protein content.

Phenological observations were evaluated and analyzed under field and laboratory conditions. observation and assessment Russian Institute of Plant Science (1991) and main periods in phenological observations (germination, emergence, budding, tuber, spike, milk, wax, full ripening) wintering, dormancy, disease resistance in field conditions International classification developed by the Russian Institute of Plant Science (SEV Triticum type, 1983) methodological manuals were used. Mathematical analysis of experimental results Dospekhov B.A. (1985) were analyzed according to the method developed.

The tolerance of varieties and lines to external environmental factors in the competitive variety test nursery was studied under field conditions. Most of the lines were resistant and durable in terms of yellow rust damage, brown rust damage, frost resistance and lodging tolerance in the studies conducted (Table 1).

Varieties and lines were infected with yellow rust in experimental varieties and lines from April 5 to 15, and the percentage of plants infected with fungal yellow rust was evaluated according to the Minners scale. The incidence of yellow rust was 10% in the model Chillaki variety, and no incidence was observed in the Sharof-100 variety. Infestation rates ranged from 10% to 25% in nursery lines. Incidence 10% in line AS-2012-D14, 25% in line AS-2014-D15, 15% in line AS-2014-D7, 20% in line AS-2014-D39, 20% in line AS-2013-D23 organized. It can be seen that these lines are infected with yellow rust disease.

When brown rust infection was observed in varieties and lines, the percentage of plants infected with the fungus was evaluated according to the Peterson scale. No disease was observed in the sample varieties in the experiment. AS-2010-D30 line showed 25% incidence of brown rust. The rest of the lines were not affected by brown rust.

In the experiment, the general condition of varieties and lines, i.e. exit from the village, and cold resistance were evaluated using a 9-point scale.

The sample selected for the competitive variety trial nursery showed that the varieties and lines were cold tolerant. It was observed that the sample varieties Sharof-100 and Chillaki have 7 points, i.e. high durability. In the selected lines, it was found that the pattern is characteristic of varieties, that is, it is durable.

It was found that AS-2014-D3, AS-2010-D21, AS-2010-D45 lines have 9 points-extremely high resistance in terms of frost resistance, and all plants are in a healthy condition in the field. Among the lines, lines with low cold resistance were identified and lines AS-2013-D14, AS-2014-D7, AS-2014-D15, AS-2012-D14 were evaluated with 5 points.

Table 2

Grain technological quality indicators of varieties and lines in competitive variety testing

№	Varieties and samples	Protein content, %	Amount of gluten, %	IDK	Group
1	Chillaki St	14,0	29,7	75	I
2	Sharof-100St	14,0	29,0	75	I
3	AS-2010-D33	14,1	29,7	85	II
4	AS-2010-D23	14,0	28,2	75	I

5	AS-2010-D30	13,9	29,2	95	II
6	AS-2010-D45	13,9	28,7	95	II
7	AS-2010-D21	14,1	30,5	80	II
8	AS-2012-D28	14,3	29,3	95	II
9	AS-2012-D31	14,0	30,1	90	II
10	AS-2012-D41-8	14,3	29,5	70	I
11	AS-2012-D14	14,0	28,8	85	II
12	AS-2012-D3	14,2	29,2	75	I
13	AS-2013-D30	14,0	29,3	75	I
14	AS-2013-D33	13,5	27,7	80	II
15	AS-2013-D14	13,2	25,5	100	II
16	AS-2013-D9	12,9	25,1	105	III
17	AS-2013-D23	14,3	29,7	80	II
18	AS-2014-D7	14,0	28,5	75	I
19	AS-2014-D3	13,5	28,1	95	II
20	AS-2014-D15	13,2	25,5	105	III
21	AS-2014-D39	13,2	24,7	105	III

Also, the following results were observed in the hybrid lines when the IDK indicator of the experimental varieties and lines were analyzed in laboratory conditions and which group they belong to. Model varieties Chillaki and Sharof-100 have an IDK index of 75% and belong to the I-group. In the experimental hybrid lines AC-2010-D33, AC-2012-D41-8, AC-2012-D3, AC-2013-D30, AC-2014-D7, the IDK index was 70-80% and it was observed that they belonged to the I-group. According to the laboratory analysis results of other hybrid lines studied in the experiment, it was found that 85-100% of IDK index belongs to II-group and 105-120% belongs to III-group.

Conclusions from the results of the conducted research:

1. Among the 19 selected constant lines in the experiment, 13 lines were found to be resistant to yellow rust and brown rust disease. Lines AC-2014-D3, AC-2010-D21, AC-2010-D45 were found to be 9 points - highly resistant to cold, and all plants were in a healthy condition in the field. Among the 19 selected constant lines in the experiment, 13 lines were found to be resistant to lodging.

2. 14.3% in AS-2012-D28, AC-2012-D41-8 and AS-2013-D3 hybrid lines, AS-2010-D33, AS-2010-D21, AS-2012-D3, lines (higher than 14.0%) it was found that the protein and gluten content of the grain was high.

3. The highest indicator of grain quality was 811.5 g/l in AS-2013-D28 line, and correspondingly positive results were obtained in AS-2010-D33, AS-2010-D30, AS-2010-D45, AS- In the lines 2012-D31, AS-2013-D30, AS-2013-D33, the result was higher than 800 g/l, and the model was superior to the varieties.

4. AS-2010-D33, AS-2012-D41-8, AS-2012-D3, AS-2013-D30, AS-2014-D7 lines were found to belong to the I-group with the IDK index of 70-80%.

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THE MOLDING PRUNING TECHNOLOGY OF DECORATIVE SHRUB FOR CREATING CLASSIC TOPIARY FIGURES IN CONDITIONS OF UZBEKISTAN

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Abstract. *The article presents the results of scientific research obtained during the study and implementation of molding pruning of ornamental shrubs to create topiary compositions in accordance with the soil and climatic conditions of Uzbekistan. In the process of work, the features of the molding pruning, the main aspects, techniques and methods, the stages of formation of topiary figures are identified, as well as attention to the conduct of subsequent pruning to maintain the specified shapes.*

Keywords: *topiary art, topiary figures, technology of creation and formation, molding pruning, thinning, decorative shrubs, assortment of shrubs, cube, ball (sphere), cylinder, pyramid, cone, spiral.*

The actuality of research work. The article presents the results of scientific research obtained during the study and implementation of molding pruning of ornamental shrubs to create topiary compositions in accordance with the soil and climatic conditions of Uzbekistan. In the process of work, the features of the molding pruning, the main aspects, techniques and methods, the stages of formation of topiary figures are identified, as well as attention to the conduct of subsequent pruning to maintain the specified shapes. Nowadays in Uzbekistan, the creation of classic topiary figures from woody and shrub vegetation by molding pruning has become a popular trend in landscape design. Topiary compositions can be used in garden parks of different styles: Japanese (Bonsai and Niwaki), Art Nouveau (columns and spirals), avant-garde (cubes, spheres and pyramids). In this connection, there is an urgent need to develop technology for the creation of topiary compositions in accordance with the soil and climatic conditions of the region.

The aim of research work. Developing a technology for molding pruning wood and shrubs when creating topiary figures, using the main methods for this type of work

The methods of work. The artificial shapes were given by the molding pruning of ornamental tree and shrub crops by G.Beltz method "Figure cutting of trees. Forms. Methods. Care" (2008). He argued that the longevity and reasonably stable size of trimmed plants gave an undeniable advantage over free-growing plants without an aesthetic appearance. To study the formation of figured forms of the crown and trunk, the principles of pruning woody and shrub vegetation, data from the training manual of A.I. Koveshnikov and N.A. Shiryayeva «Ornamental plant growing. Fundamentals of Topiary Art» were used. The method of V.S.Theodoronsky and I.O.Bogova «Landscape architecture» (2010) and V.S.Theodoronsky and V.L.Mastrovsky «Landscape Architecture and Garden Art» (2001) were used in carrying out research on the architectonics of shrubs. The work involved F.N. Rusanov (1968) on selection of perspective assortment for reconstructed Tashkent. The main techniques of decorative molding

pruning were carried out according to the method specified in the practical edition of R. Bird «Practical pruning and forming of trees, decorative and fruit shrubs» (2016).

Discussion of research results. Topiary art is based on shaping shrubs with molding pruning. These forms can be both simple and complex, multi-component. Simple shapes include a cube, a ball, a cylinder, a pyramid, a cone, a spiral, etc. Complex shapes include pom-poms, a poodle, a ball on a thin trunk, a box on a trunk, etc. The principle of shaping these figures differs only in that in complex figures a stem is formed at the preliminary stages of creation, and the direct formation of the crown is carried out using a similar technique with simple forms. Therefore, this article provides a technique for the formation of simple figures.

1. Cube. This topiary figure is created as a structural element of the garden and a symbol of the change in the natural appearance of shrubs. This figure looks more effective in a landscape composition in combination with other artificially given simple geometric shapes (cone, ball, cylinder). The plants used to create this form should be small-leaved, with a dense crown, as well as well tolerated forming pruning. They are used in greening landscape gardening territory. of modern, Mediterranean, regular style.

Assortment of shrubs: boxwood, common ninebark, shiny cotoneaster, mountain hawthorn.

Technology of creation and formation. To create a topiary figure of the “Cube” shape, 2 technologies can be used (*Fig. 1.*):

- creation and formation of a topiary figure by molding pruning of an adult shrub growing on the site;

- creation and formation of a topiary figure by planting young seedlings, followed by their molding.

When creating a figure by planting seedlings, it is necessary to mark a square on the territory with the help of pegs. For planting, we use a minimum of 5 shrubs, planting 4 bushes at the corners of the square and one bush in the middle. Immediately after planting, the shoots should be shortened by 1/3 or 2/3. The formation of the figure begins the next year after planting, as the seedlings must take root and settle down. The next stage of creating a figure is identical for both technologies, with the difference that for an adult bush it is necessary to outline the shape of a square on the ground. In the corners of the selected square, we set wooden rails, holding them horizontally. The length of the rails depends on the size of the intended figure. You can also use a ready-made metal frame created from the chain-link mesh, with mesh sizes of 1x1cm. The first step in the shaping pruning is to make a rough cut to create the outline of the cube. In the conditions of Uzbekistan molding pruning is carried out by medium shortening technique in March. Begin pruning at the top of the figure, moving to the sidewalls, shaping 3-5 cm above the frame. This is done to prevent gross errors and maintain a clear shape of the figure. Next, we carry out a finishing cut directly along the contour of the frame using a water pass (level), to ensure that the horizontal and vertical surfaces of the figure are perfectly aligned. We carry out a visual inspection of the resulting figure. If any stumps, damaged branches or half-timbered leaves are left on the outline, they must be removed by thinning techniques so that the figure does not lose its decorative appearance. In the conditions of Uzbekistan, the following molding pruning is carried out in early March, before the start of sap flow. We carry out an intermediate cut if necessary (in the case of using fast-growing breeds) in June, and the last cut in September - October. In order to maintain the specified height parameters of the figure in subsequent years, it is possible to make a molding

pruning technique by pinching top surface of the figure in March, which will slow down the growth of the figure in height.



Fig.1. Creation and formation of a topiary figure «Cube»

2. Ball (sphere). This figure is quite difficult to create and shape, as it is not possible to perform a molding pruning on the moulds. The parameters of the "Ball" figure are easier to select based on the size of the applied plant. The plants used to create this form should be small-leaved, with a dense crown, as well as well tolerated forming pruning. Topiary figures of this form are used in the creation of landscape design of Mediterranean, historical, modern formal parks, as well as rustic gardens.

Assortment of shrubs: common ninebark, gray spirea, Vanguetta spirea, hawthorns, shiny cotoneaster, common barberry and Thunberg, small-leaved holly, evergreen boxwood.

Technology of creation and formation. To create a topiary figure of the "Ball" shape, 2 technologies can be used (*Fig.2.*):

1. Loose cut
2. Creating a shape from others (cube, cylinder)

When using the first technology, we make a cut "by eye", in compliance with the sequence of forming pruning. We make a rough forming pruning of this figure with medium technique, cutting a straight line. Initially, the base of the plant is sheared, and the side shoots are shortened. The second step is to cut the top of the bush, thus we set the figure's height. Next, we cut the lateral shoots of the upper part of the bush, and lastly, we form the side surfaces, giving the figure a volume corresponding to the height. When moving from one stage of cutting to another, it is necessary to visually check the parameters of the figure obtained during the trimming, so the height of the figure should correspond to its width. Next, proceed to the final pruning, rounding the obtained corners.

In the process of creating the "Ball" shape using the second technology, it is possible to use auxiliary tools (moulds), which facilitates the work. In the first variant of this technology, it is possible to form the shape of a "Cube" or "Cylinder" using the technique of medium shortening according to moulds. Then we proceed to the finishing cutting by slightly shortening. First, the corners are truncated, then we cut the figure "by eye", retreating from it a couple of steps. In the conditions of Uzbekistan molding pruning is carried out using the medium shortening technique in March, before the start of sap flow. We carry out an intermediate cut using a weak shortening technique in June, and the last cut in September - October. If it is necessary to maintain the given dimensions of the figure, molding pruning is carried out using the thinning technique - tweezing along the entire crown of the shrub, which will slow down the growth of the figure in height and encourage the growth of lateral branches, which will give the figure greater density. This process in the conditions of Uzbekistan is carried out in June. If there are old, weakened branches on the

bush, they can be removed by the thinning technique - a cut into a "ring" in March, June - depending on their location.



Fig.2. Creation and formation of a topiary figure «Ball (sphere)».

3. Cylinder. The topiary figure of the "Cylinder" shape is created by molding pruning of the formed shrub, as the application of young plants will take more time to fill in the form. Also, it is necessary to take into account its placement on the landscaped area, as an important condition is even lighting of all its sides. The advantage of this figure is the ability to grow it in height, although acropetal growth often leads to a change in the parameters of the figure, which requires more care. These figures are used in urban landscaping in Mediterranean, formal, historical, modern style contemporary garden areas. Also, these figures look good when decorating the entrance and alley areas.

Assortment of shrubs: snowy mespilus, bird cherry, boxwood, privet and other evergreens that tolerate mold pruning well.

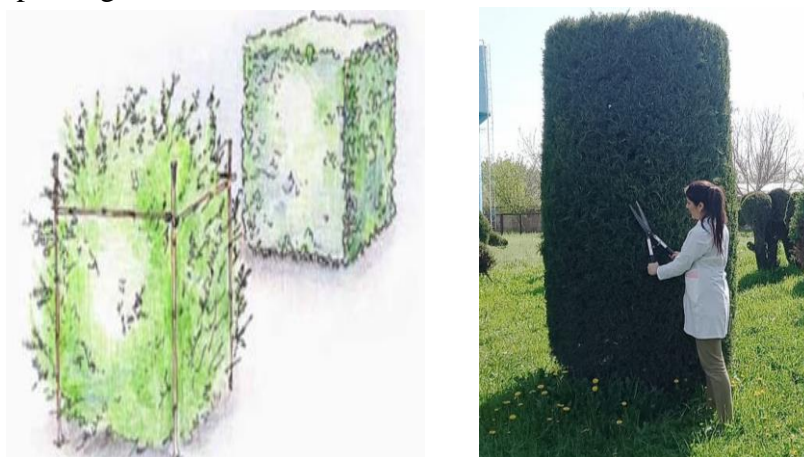


Fig.3. Creation and formation of a topiary figure «Cylinder»

Technology of creation and formation. To create this figure, it is necessary to use auxiliary materials - guide rails. The first step in creating the shape is to mark the base in a circle on the ground around the plant. The diameter of the circle is selected depending on the habitus of the shrub used. To create a frame around the perimeter of the circle, we install guide rails in an amount of at least 6 pieces. To facilitate work, you can stretch the chain-link mesh around the rails, or fasten the vertical rails with additional horizontal wires. The molding pruning of this figure begins with a rough cut using the medium shortening technique (Fig.3). In the conditions of Uzbekistan, this procedure is carried out in March before the start of sap flow. When carrying out a rough haircut, it is necessary to deviate from the frame at least 5 cm or 3 buds, to be able to correct errors. We start the molding pruning from the top of the figure. Passing to the side part - column, it is necessary to regularly go back several steps and visually check the contour of the resulting circle. If the plant has damaged, shriveled branches, they must be removed by the thinning technique -

cut into the ring. Finishing molding pruning is carried out using the technique of weak shortening along the contour of the frame. To align the horizontal and vertical surfaces of the cylinder, we use the water pass (level). Subsequent molding pruning is carried out in June (if the intensive growth of shoots violates the proportions of the figure). If it is necessary to maintain the height of the figure, molding pruning is carried out using the thinning technique - tweezing in the conditions of Uzbekistan in the month of June.

4. Pyramid. The creation of a figure is carried out by molding pruning, and the figures can be either triangular, quadrangular, or hexagonal. Plants for this figure are selected in large sizes, as the shape has a square base. They are used in urban landscaping of modern, historical, formal and Mediterranean parks.

Assortment of shrubs. Boxwood, common hawthorn, mountain hawthorn.

Technology of creation and formation. To create a figure (Fig.4), it is necessary to outline the base of the pyramid on the ground around the bush. At the corners of the figures are mounted wooden rails, which must be connected at the top. The number of guide rails depends on the number of corners of the figure. To give strength to the resulting frame, you can wrap it with a chain-link mesh, or additionally connect it with rails, which will serve as a guide for further formation. We make a cut smoothly on all planes, periodically distancing from the figure in order to visually evaluate the result. In the conditions of Uzbekistan molding pruning is carried out by the technique of weak shortening in March. In the presence of old, weakened, shrunken branches, it is necessary to remove them with the technique of thinning on the «ring» in March. Subsequent cuts, to maintain shape, are carried out from March to April, and if necessary, in September - October (if the figure is out of proportion).



Fig.4 Creation and formation of a topiary figure «Pyramide»

5.Cone. The creation of this figure is similar to the technique of creating the figure «Pyramid», with the difference that the base of this figure is round. The figure «Cone» is easier to create by molding cutting adult shrubs. This figure requires special attention to the top, as because of the intense acropetal growth, it is this part that quickly loses the set parameters and its decorativeness. The figures of this form can be used in the creation of historical, modern, formal parks, as well as the design of portals, entrances, are used as alley landings and landings along fences.

Assortment of shrubs. It is rather sparse, as in most cases shrubs have a spreading or spherical shape. Basically, boxwood or privet is used.

Technology of creation and formation. To create a topiary figure of the “Cone” shape, 2 technologies can be used (Fig.5): 1. Molding pruning of adult shrubs; 2. Create a shape from the figure «Pyramid» by rounding corners.

The process of creating this figure using the first technology is similar to the process of creating the Pyramid figure. We draw a circle on the ground around the plant, preferably calculating the radius, using the main skeletal branch as the center of the circle. To form this figure, you can use both a ready-made stationary frame made of metal, and prepare a temporary frame from rails and a chain-link mesh. To prepare a temporary frame, we set 3-6 rails equidistantly along the intended circle, connecting them at the top of the figure with a wire. Next, we wrap the frame with a chain-link mesh, or stretch the wire horizontally. We carry out rough molding pruning along the installed rails, using the shortening technique, but its degree depends on the habitus of the shrub used. A cut in the lower part of the bush can be done using the weak shortening technique, and starting from the middle to the top, using the medium technique. After rough pruning along the rails, finish pruning the entire shape with the base of the circle and the center of the apex in mind. During the cutting process, it is necessary to carry out a visual inspection stepping away from the figure to evaluate the result. To obtain a more symmetrical shape, you can use the water pass (level), measuring the angle of inclination of each side when cutting it. If there are shrunken, diseased, overlapping branches in the crown, we remove them by thinning - a cut "on the ring". Shaping of this figure is carried out in March before the start of sap flow. Since, due to the characteristics of the growth of shrubs, this figure quickly loses its decorative effect, it is necessary to carry out intermediate pruning several times during the growing season. When using the second technology for creating the "Cone" figure, we carry out molding pruning of the finished "Pyramid" figure, rounding the corners with the technique of medium shortening. Finishing pruning is carried out using the technique of weak shortening, adjusting the symmetry of the shape with the help of water pass (level), measuring the angle of inclination of each side during its cutting.



Fig.5 Creation and formation of a topiary figure «Cone»

6. Spiral. There are various forms of spirals: "Spindle", "Screw" ("Corkscrew"), a spiral with a twisted barrel. The "Spindle" shape is obtained if the distance between the turns of the spiral is large, in the case when the distances are small, the "Screw" or "Corkscrew" shape is obtained the spiral is initially formed from the "Cone" figure, provided that it has sufficient height.

Assortment of shrubs. More often, when creating these topiary figures, trees are used; to get this shape from shrubs, shiny cotoneaster and small-leaved boxwood are recommended

Stages of creation and formation. The first step in creating the "Spiral" figure is the formation of the "Cone" shape, using the technology described above. This figure is formed over several years, because as the shrub grows, it has side shoots that break out of the given shape. To create a topiary figure of the "Cone" shape, 2 technologies can be used (*Fig.6*):

1. Arbitrary formation (with the help of rails)
2. Formation of curved lines (with the help of ribbons)

In the case of the arbitrary formation of the “Spiral” figure, in the first year we draw a circle around its base on the soil, on which we install auxiliary rails connected at the top of the figure. On the rails we make marks of tiers that will help in the course of shaping the figure. We cut the tiers according to the marks on the rails, using the thinning technique - a cut “into a ring” along the contour, rounding them spirally from one tier to another. In the first year, we make a rough molding pruning of the resulting tiers, using a shortening technique to a weak or medium degree. The main factor in the creation of the topiary form "Spiral" is the organic relationship between the parameters of the tiers and the overall height of the figure. In subsequent years, the formation of the figure is carried out by technicians of weak shortening in the conditions of Uzbekistan in March. If the raw material - shrub, has sufficient density, then tiers can be formed using ribbons. We tie the tape to the lower part of the trunk, wrapping it around the plant, fixing it in the upper part. We correct the angle of inclination of the ribbon and the distance between the turns so that the tiers have approximately the same height. We cut out the contour of the tier using the thinning technique - a cut “on the ring”. In the first year, the formation of the figure takes place with the help of rough molding pruning of tiers - the technique of weak or medium shortening based on the size of the shrub. In the conditions of Uzbekistan, it is necessary to carry out in March. In June, we carry out additional molding pruning to remove the thickened shoots of the central axis, as well as to make the tiers clear. In subsequent years, we carry out molding pruning of tiers by shortening as necessary.

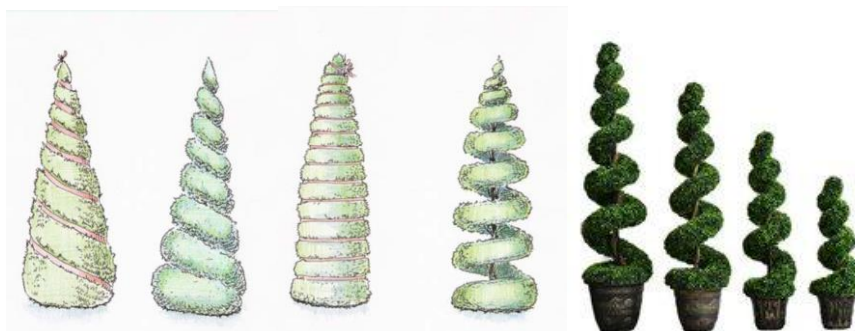


Fig.6 Creation and formation of a topiary figure «Spiral»

Conclusions. In this connection, there is an urgent need to develop technology for the creation of topiary compositions in accordance with the soil and climatic conditions of the region. Ornamental molding pruning is done taking into account the biology of the plant's development and growth and in accordance with the climatic conditions of the region. Shaping technology is different. There are main stages in the formation of topiary compositions, which include initial molding pruning and subsequent supporting pruning. In this case, two techniques are used: shortening technique (weak, strong, medium); cutting technique (slicing on the ring, pinching). Depending on the spatial orientation of the naturally growing branches, certain technologies are applied for each figure. In the course of the study, the period for the formation of each figure was determined, which corresponded to the soil and climatic conditions of Uzbekistan, which makes it possible to introduce these technologies into the landscaping system of the country's garden and park zones.

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