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INVESTIGATION OF THE CHEMICAL AND BIOLOGICAL COMPOSITION OF THE MEDICINAL PLANT JUZGUN LEUCOCLADUM FOR FURTHER PRODUCTION OF AN ANTIBACTERIAL VETERINARY DRUG

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ANNOTATION
Juzgun (лат. Calligonum) is a genus of perennial deciduous branching shrubs from the Buckwheat family (лат. Polygonaceae). According to some data, up to 158 plants are included in the genus, but since the genus is poorly studied, the definition of the species included in it is considered inaccurate. Moreover, some scientists claim that it is impossible because of multiple morphological differences that do not have geographical certainty. Tannins, citric and phenolic carboxylic acids, alkaloids, leucoanthocyanidins, flavonoids were found in the chemical composition of plants from the genus Juzgun. Plants from the genus Juzgun can potentially serve as a source of medicinal raw materials. Scientists have found phenolcarbonic acids in them, which have a choleretic effect, acting as a hypotensive agent. Antitumor effect is endowed not only with the leucoanthocyanidins present in the representatives of the genus, but also a number of flavonoids.We have investigated the chemical composition and identification of biologically active compounds in the vegetable raw materials of the Juzgun leucocladum. Physico-chemical studies have been carried out. The elemental composition of raw materials has been determined.The morphology of the raw materials was investigated, and the amino acid composition of the raw materials was also determined. The first samples of a veterinary drug based on Juzgun plant raw materials and phytosorbents for veterinary purposes were obtained and sent for clinical research.
Key words: juzgun, phytosorbent, veterinary drug, plant raw materials, elemental analysis, chemicals.

Introduction. Juzgun - Calligonum, from the Polygonaceae family (Buckwheat), is represented by shrubs or semi-shrubs about 30 cm high. Xerophytes adapted to the conditions of deserts or semi-deserts. The roots go down to a depth of 30 meters, reach groundwater; besides, the sands retain water, which allows the plant to extract moisture already at a depth of 1.5 m. The species of Juzgun are leafless, and their short assimilative shoots are dropped in summer: the windfall in drought. Types of juzgun are actively used as sand fixers, methods of creating long-term plantations on the sands have been developed [1].

Annotation. Juzgun is a genus of perennial deciduous branching shrubs with an extensive root system and an openwork crown. The leaves of the plants are short, needle-shaped, the flowers are solitary, small, from white to pinkish-purple. Plants from the genus Juzgun potentially have hypotensive, choleretic and antitumor effects [2].

Plants from the genus Juzgun are not pharmacopoeial, are not listed in the Register of Medicines and are not used in either official or folk medicine, however, the chemical composition of the plant suggests that they have hypotensive, antitumor and cholereticproperties. Shrubs from 0.5 to 4 m tall, very branched, with an openwork crown. The stems and old branches are curved. Young shoots are long, sinuously curved, green or grayish-green, segmented, as if leafless, almost completely dying off and falling off in autumn. The leaves are inconspicuous, linear or

needle-shaped, 3-7 mm long, at the base with a scaly-leathery stem-embracing bell [3]. The flowers are axillary, solitary, bisexual, regular, with a simple 5-membered perianth. The leaves of the latter are white, pink, pinkish-purple, greenish. Stamens 12-18. Ovary 4-sided, upper [4].

The purpose of the work: To study the physico-chemical composition of Juzgun and to obtain solid and liquid dosage forms

Object of research: medicinal plant Juzgun-leucocladum

Research methods: physico-chemical methods, determination of amino acids, determination of benzoic acid, determination of elemental composition, determination of specific surface area**.**

Juzgun is a genus of perennial deciduous branching shrubs with an extensive root system and an openwork crown. The leaves of the plants are short, needle-shaped, the flowers are solitary, small, from white to pinkish-purple. Plants from the genus Juzgun potentially have hypotensive, choleretic and antitumor effects [5].

The Latin name of the genus comes from the Greek words "callos" (beautiful) and "gonos" (knee) and reflects the peculiar appearance of the twigs of the plant, which are joined together with each other.The Russian name "джузгун " is a modified Kazakh "жузгун", which means: the fruits of the plant are like the sun. The local population calls this plant "candym" or "kislets". The latter name is due to the fact that the juzgun twigs taste sour and resemble sorrel, which also belongs to the buckwheat family [6].

One of the striking features of juzguns is winged or covered with numerous bristles fruits that are easily carried by the wind, while avoiding burial by sand. The woody shell delays germination, and therefore seed germination is usually low [7].

In the genus juzgun there are both trees and shrubs that are closely related to the desert community and have a number of common biological features. This applies, first of all, to the life form of the plant itself. The fact is that even in the same species, it varies depending on environmental conditions. In places with close groundwater occurrence, some species acquire the appearance of tree-like or large multi-stemmed shrubs, but on sands with deep groundwater, these same species may turn out to be low shrubs up to 1.5 m high [8].

The leaves of juzguns are narrow, cylindrical or needle-shaped, 4-7 mm long, fall off quickly. The photosynthetic function during the summer is performed by annual green shoots, cylindrical, relatively thin, and also falling in autumn. They are sometimes called "assimilation twigs"[9]. Due to the presence of axillary group branching buds in juzguns, assimilative twigs grow in bundles, which gives the shoots of the shrub a peculiar appearance. Due to the annual branching of shoots (new shoots of higher orders grow from the lower lateral buds of shoots of the previous year), as well as the annual death of most of each new shoot at the nodes of perennial branches, some species form peculiar inflows or thickenings [10].

In addition to thin annual shoots, so-called growth shoots are formed in the crowns of these shrubs, which live for 3-6 years. It is at the nodes of these shoots that annual assimilating shoots grow annually during their life, creating over time characteristic bundle-like formations.

Finally, from the bases of perennial stems, juzguns sporadically grow shoots up to 100 cm long (in the first year of their development). Over time, such shoots themselves turn into perennial stems, on which growth and assimilation shoots are formed first sequentially, and then in parallel.

The formation of flowers can occur, as a rule, on shoots of 4-6 orders. Usually the flowers appear one at a time on a separate shoot node [11,12].

Vegetation of these desert shrubs begins in late March - early April. Flowering is observed in mid- or late April, and fruiting and seeding in late May or early June. Assimilation shoots fall off at the same time as the fruits, but in wet years they can persist until late autumn. Seeds that were on the surface of the soil and among the grass during the winter begin to germinate in early spring. Most species retain seed germination for 5-9 years, which, taking into account the "mobility" of the fruits of the plant under the influence of winds, makes it possible for them to germinate

only after entering favorable conditions. Already in the first year of life, the seedlings reach a height of 10-20 cm, and their root system penetrates 60-70 cm deep [13]. In the second year, the growth of the main shoot and the appearance of lateral shoots occurs, the main root penetrates to a depth of 1 m and, in addition, lateral roots are formed that grow horizontally at a distance of 1-2 m. In general, the development of individuals of juzguns occurs very quickly, and the shrub reaches its characteristic size at the age of 5-6 years [14].

Approximately at the same age, the first flowering is observed. The root system of an individual adult specimen occupies a very large area, since the length of the lateral horizontal roots reaches about 20 m [15].

Juzguns define the landscape of many areas of the desert zone, withstanding extreme conditions in most habitats. They suffer most from episodic spring frosts, when at temperatures of 2-5 ° C, young shoots turn black and dry out, giving way after a while to new shoots growing again.

The economic importance of these shrubs is very significant. Their young branches and fruits, which have a pleasant sour taste, are readily eaten by sheep and camels. In winter, sheep eat fallen twigs and fruits from the ground. The nutritional value of these products in conventional feed units is quite high. The green twigs of juzgun contain tannins. Wood of tree-like species serves as a good building material and fuel in desert conditions. Finally, Juzguns are excellent sand anchors and are used for land reclamation in conditions of mobile sand massifs. They are able to form new lateral (accessory) roots at the base of their stems after covering them with sand [12,13].

Contraindications and side effects.

Since plants from the genus Juzgunare not used in either official or folk medicine, contraindications to their use have not been identified, but this does not mean that the plant is safe.

Plants from the genus Juzgun have an extensive root system. The main root in the first year of the plant's life goes to a depth of 60-70 centimeters, after a year its length reaches a meter or more, horizontally growing lateral roots grow. After 5-6 years, the total area occupied by horizontally growing roots can reach 20 meters. The appearance of plants from the genus Juzgun depends on environmental conditions. If they grow where the groundwater is shallow, the plants of the genus Juzgun take the form of multi-stemmed tree-like shrubs, sometimes reaching 5-7 meters in height. In the same place where the water lies deep under the sands, these are low shrubs, a maximum of 1.5 meters high.

Plants of the genus Juzgun have short falling leaves (5-7 mm), needle-shaped or cylindrical with a scaly-leathery stem-embracing bell at the base. Instead, the function of photosynthesis in summer is performed by annual shoots called assimilation twigs. Green, thin, cylindrical, they also fall off in autumn. Growth shoots, on which assimilative shoots grow, live from 3 to 6 years. At their nodes in the spring, new twigs grow from the lower axillary lateral buds of last year's shoots. Plants of the genus Juzgun have another type of shoots - shoots that eventually turn into perennial stems. The growth and assimilation shoots growing on them form an openwork crown characteristic of plants. Bisexual, axillary, fragrant flowers of the plant with white, pink or pinkish-purple, less often greenish petals, grow one at a time on separate nodes of shoots of 4-6 orders. The fruit of plants from the genus Juzgun is a nut, the processes or bristles on which give it a spherical shape.

Plants from the genus Juzguncan be found in the deserts and sandy steppes of North Africa, western Siberia, the Anterior and Central Asia. The distribution area of the plant extends from west to east from the Sahara Desert to the Alashan and Ordos deserts.

Classification

Juzgun (Latin Calligonum) is a genus of perennial deciduous branching shrubs from the Buckwheat family (Latin Polygonaceae). According to some data, up to 158 plants are included in the genus, but since the genus is poorly studied, the definition of the species included in it is considered inaccurate. Moreover, some scientists claim that it is impossible because of multiple morphological differences that do not have geographical certainty.

Chemical composition

Tannins, citric and phenolic carboxylic acids, alkaloids, leucoanthocyanidins, flavonoids were found in the chemical composition of plants from the genus Juzgun.

Pharmacological properties

Plants from the genus Juzgun can potentially serve as a source of medicinal raw materials. Scientists have found phenolcarbonic acids in them, which have a choleretic effect, acting as a hypotensive agent. Anti-tumor effect is endowed not only with the leucoanthocyanidins present in representatives of the genus, but also a number of flavonoids [12-15].

Materials and methods of research. Physico-chemical methods of analysis:

The study of the mass fraction of moisture and ash was determined according to GOST 24027.2-80

The method for determining humidity is based on determining the loss in mass due to hygroscopic moisture and volatile substances when drying raw materials to an absolutely dry state [16].

The analytical sample is quickly crushed with scissors or pruning shears to a particle size of about 10 mm, mixed and two weights weighing 3-5 g, weighted with an error of no more than 0.01 g, are taken. Each suspension is placed in a pre-weighed and numbered bux together with the lid.

When calculating the content of ash and active substances on absolutely dry raw materials, the loss in weight is determined during drying in samples prepared for appropriate tests. At the same time, two raw materials weighing 1-2 g, weighted with an error of no more than 0.0005 g, are taken simultaneously with the attachments for the determination of ash and active substances [17].

In the drying cabinet, heated to 100-105 ° C, the prepared buckets with attachments are quickly placed together with the removed lids. At the same time, the temperature in the cabinet drops. The time during which the raw materials should be dried is counted from the moment when the temperature in the cabinet reaches 100 - 105 ° C. Drying is carried out to a constant mass.

The constant mass is considered achieved if the difference between the two subsequent weighings after 30 minutes of drying and 30 minutes of cooling in the desiccator does not exceed 0.01 g.

When calculating the ash content and active substances on absolutely dry raw materials, drying is carried out until the difference between the two subsequent weighings does not exceed 0.0005 g.

The first weighing of roots, seeds, fruits and bark is carried out after 3 hours, leaves, flowers and herbs - after 2 hours. Buckets with attachments are removed from the cabinet with crucible forceps and placed for 30 minutes to cool in a desiccator, at the bottom of which there is anhydrous calcium chloride. The cooled buckets are closed with lids and weighed. Calcium chloride is periodically calcined or replaced with a new one.

Two parallel definitions are carried out. Processing of results [18].

The moisture content of raw materials (X) as a percentage is calculated by the formula

$$X \frac{(m-m_1)*100}{m},$$

m – where - weight of raw materials before drying, g;

m_1-mass of raw materials after drying, g.

For the final test result, the arithmetic mean of the results of two parallel definitions calculated to tenths of a percent is taken, the permissible discrepancy between which should not exceed 0.5%.

The method for determining the ash content is based on the determination of the incombustible residue of inorganic substances remaining after combustion and calcination of raw materials [19]. The ash is divided into:

total ash, which is the sum of mineral substances peculiar to the plant, and extraneous mineral impurities (earth, sand, pebbles, dust);

ash insoluble in 10% hydrochloric acid, which is a residue after the treatment of total ash with hydrochloric acid and consisting mainly of silica.

Preparation for the test [20].

The analytical sample of raw materials is crushed and sieved through a sieve with holes with a diameter of 2 mm.

In a porcelain crucible pre-calcined to a constant mass, a weight of 1-3 g is taken to determine the total ash and 5 g to determine the ash insoluble in 10% hydrochloric acid. The suspension is weighed with an error of no more than 0.0005 g.

The raw materials in the crucible are carefully charred over a weak flame of a gas burner, taking care that the flame does not touch the bottom of the crucible, or on an electric stove. At the same time, an asbestos mesh is placed on it. After complete charring of the raw materials, the crucibles are transferred to a muffle furnace for burning coal and complete calcination of the residue. Calcination is carried out at red heat (550-650 ° C) to a constant mass, avoiding the fusion of ash and sintering it with the walls of the crucible. At the end of calcination, the crucible is cooled for 2 hours, then placed in a desiccator, at the bottom of which there is anhydrous calcium chloride, cooled and weighed. The constant mass is considered achieved if the difference between the two subsequent weighings does not exceed 0.0005 g [21,22].

If, after cooling, the residue still contains coal particles, then a few drops of a 5% solution of hydrogen peroxide, concentrated nitric acid or a 10% solution of ammonium nitrate are added to it, evaporated under traction in a water bath and calcined again until the residue takes a uniform color. If necessary, this operation is repeated several times.

To determine the content of ash insoluble in 10% hydrochloric acid solution, 15 см^3 of 0% hydrochloric acid solution (density 1.050 g / cm) is poured into a crucible with a common room; the crucible is covered with a watch glass and heated in a boiling water bath for 10 minutes.

Then the crucible is removed and after cooling, the contents are filtered through an ash less filter. Crucibles, watch glass and filter are washed with distilled water until the appearance of turbidity in the washing waters stops from a drop of 2% silver nitrate solution. The filter is placed in a crucible, dried, carefully burned in a crucible, after which the crucible is calcined to a constant mass of the residue [23,24].

Two parallel definitions are carried out.

Total ash content (X_1) the percentage in absolutely dry raw materials is calculated by the formula

$$X_1 = \frac{m_{1*} * 100 * 100}{m_2 * (100 - W)}$$

m_1 - where is the ash mass, g;

m_2 -mass of raw materials, g;

W - weight loss during drying of raw materials, %.

The content of ash insoluble in 10% hydrochloric acid solution (X_2), as a percentage in absolutely dry raw materials is calculated by the formula

$$X_2 = \frac{(m_1 - m) \cdot 100 \cdot 100}{m_2 \cdot (100 - W)}$$

m_1 - where is the mass of ash, g;

m- the weight of the filter ash (if the ash of the latter is more than 0.002 g);

m_2 - mass of raw materials, g;

W - weight loss during drying of raw materials, %.

For the final result of the test, the arithmetic mean of the results of two parallel definitions is taken, calculated to hundredths of a percent for raw materials with an ash content (total or insoluble) of no more than 5% and to tenths of a percent for raw materials with an ash content (total or insoluble) of more than 5%, the permissible discrepancies between which should not exceed 0.1% for raw materials with a total or insoluble ash content of 5% and 0.5% for raw materials with a total or insoluble ash content of more than 5%.

Determination of the mass fraction of sorbic and benzoic acid [25]

The determination of sorbic and benzoic acids (GOST 33332-2015) in products is based on their extraction from a product sample with a buffer solution of ammonium acetate containing methanol, purification of the resulting extract and subsequent quantitative determination

of sorbic and benzoic acids in the extract by reverse-phase high-performance liquid chromatography (HPLC).

The separation of sorbic and benzoic acids occurs at ambient temperature in an isocratic mode using a methanol solution and an acetate buffer solution as a mobile phase.

Detection is carried out using a spectrophotometric detector in the ultraviolet region of the spectrum.

The measurement duration does not exceed 30 minutes.

Weigh (2,000-10,000) g of the sample, and transfer it quantitatively into a measuring flask with a capacity of 250 cm (V), pour 100 cm of the extracting solution, the flask, without closing the stopper, is heated in a boiling water bath for 30 minutes, stirring periodically, after which 5 cm of the Karreza I solution and Karreza II solution are applied sequentially, thoroughly mixing the contents of the flask after each application, brought to the mark with water and thoroughly mixed. The solution from the measuring flask is transferred to test tubes and centrifuged at 3000 rpm for 15 minutes. The filler layer from the test tube is filtered through a cartridge for solid-phase extraction, an aliquot with a volume of 10 cm (V) is pipetted from it into a measuring flask with a capacity of 50 cm (V) and brought to the mark with an extraction solution prepared according to 7.5, thoroughly mixed [26].

The resulting solution is used for chromatographic measurement. Chromatographic measurement of sorbic and benzoic acids. A sample solution is injected into the chromatograph injector with a micro-syringe, completely filling the injector loop, and measurements are carried out. Two chromatograms of the sample solution are obtained. Peaks of sorbic and benzoic acids are recorded on chromatograms, coinciding in retention time with peaks on chromatograms obtained by measuring calibration solutions. The values of the peak areas on the chromatogram of the sample solution are used to calculate the mass fractions of sorbic and benzoic acids, so that they do not exceed the upper limit of the calibration characteristic range.

The relative discrepancy of the retention time should not differ by more than 5%[27].

Research results. Investigation of the chemical composition and identification of biologically active compounds in the vegetable raw materials of the Juzgun leucocladum.

The scanning electron microscope is a modern device with an increased level of automation of research processes in the field of nanotechnology. It is necessary to obtain images with a resolution of less than 2.5 nm, and to conduct qualitative and quantitative analysis of nanoscale objects.

Determination of the elemental composition of Juzgun was carried out with a scanning electron microscope Quanta 200i 3D (FEI Company, USA).

2 samples of crushed Juzgun were examined. Based on the results of studies in the sample №1: C – 53,53 %, O – 31,96 %, Ca – 5,56%, K – 4,01%, Na – 2.18%. (fig. 2. A.)

Element	*Wt%*
C	54.97
O	41.50
Na	0.52
Mg	0.31
Al	0.16
Si	0.08
P	0.06
S	0.12
Cl	0.06
K	0.63
Ca	1.58

A.

Element	*Wt%*
C	53.53
O	31.96
Na	2.18
Mg	0.82
Al	0.11
Si	0.15
S	0.40
Cl	0.44
K	4.01
Ca	5.56
Fe	0.86

B.

Figure 1 - Elemental composition of juzgun. A – example №1, B – example №2.

In the second sample№2: C – 54,97 %, O – 41,50 %, Ca – 1,58%, K – 0,63%, Na – 0,52%. (Figure 1. A.)

The graphics of the elemental analysis and photographs of samples are shown in Figure №2.

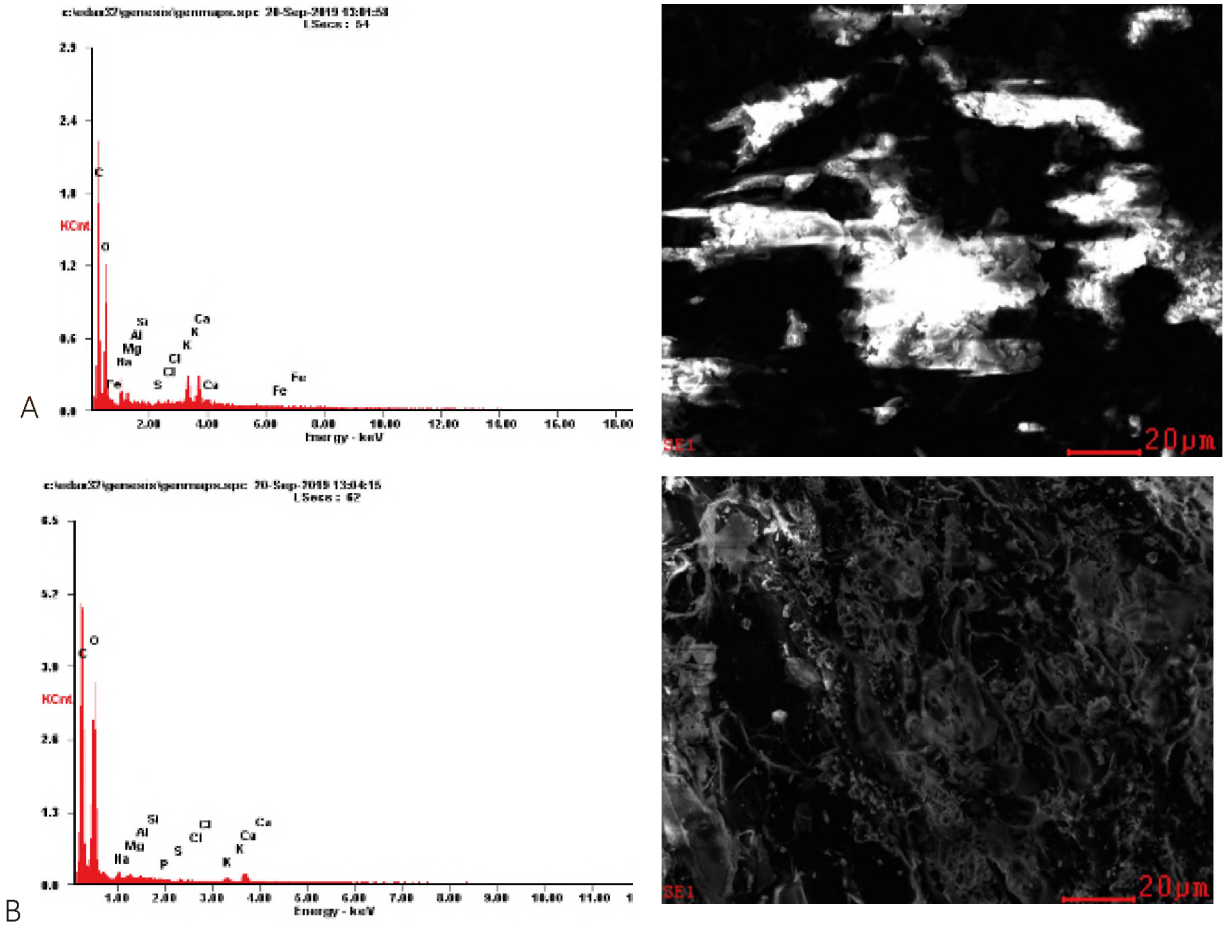

Figure 2 - Graphics and photographs of Juzgun samples on a scanning electron microscope Quanta 200i 3D

Studies of the morphology of powder samples were carried out using a scanning electron microscope (SEM) (Figures 3, A, B, C). The morphology of the obtained powder samples has an amorphous disordered structure Figures 3, A, B. The particle size distribution of Juzgun powders is wide (1.5 - 50 microns), which is typical for powders obtained from vegetable raw materials.

In samples №2 there are ordered particles with a crystal structure Figure 5, B., which is due to the presence of Ca in the elemental composition. The particles have clearly defined boundaries and have a rectangular shape. Theseparticleshave a narrow-sizedistributionof 0.8 - 3.7 microns.

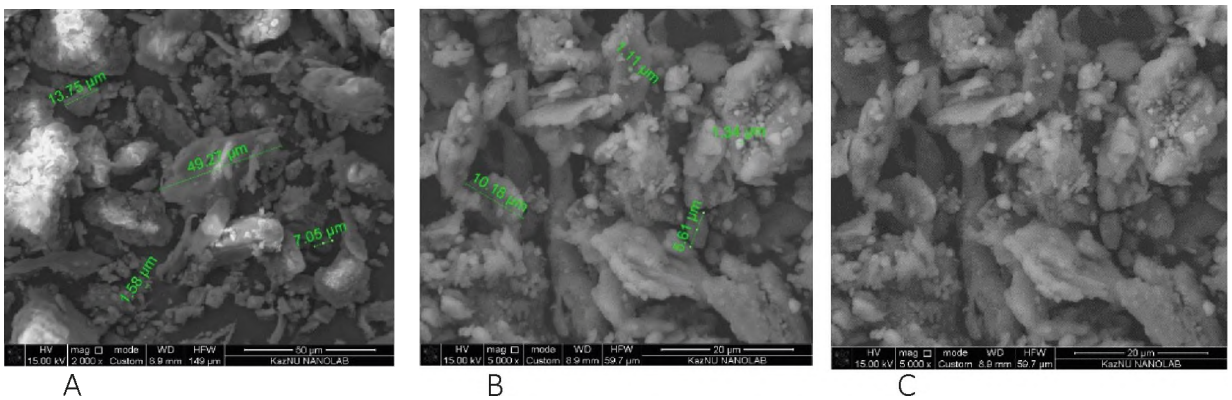

Figure 3 - Morphology of crushed Juzgun raw materials, sample №1

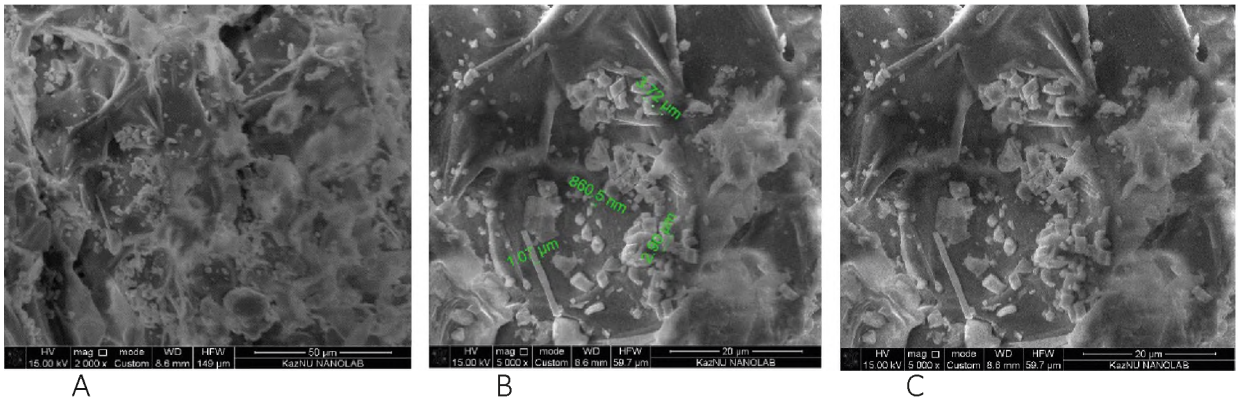

Figure 4 – Morphology of crushed Juzgun raw materials, sample №2

The mass fraction of moisture and ash of the medicinal plant Juzguna according to GOST 24027.2-80 were also studied. According to the results of the analysis, the mass fraction of moisture is 5.91 ± 0.03%, and the mass fraction of ash is 7.23 ± 0.01%. This is typical for vegetable raw materials, does not exceed the norm.

Table 1 - Mass fraction of moisture and ash and amino acid composition of the medicinal plant Juzgun

Name of indicators, units of measurement	Actuallyreceived	Designation of ND for test methods
1	2	3
Physico-chemical:		
Massfractionofmoisture, %	5,91±0,03	GOST 24027.2-80
Massfractionofash, %	7,23±0,01	GOST 24027.2-80
Amino acid composition, g/100 g:		
Asparticacid	0,15	MFM MN 1363-2000
Glutamicacid	0,20	MFM MN 1363-2000
Serin	0,17	MFM MN 1363-2000
Histidine	0,18	MFM MN1363-2000
Glycine	0,16	MFM MN1363-2000
Threonine	0,38	MFM MN1363-2000
Arginine	0,12	MFM MN 1363-2000
Alanin	0,15	MFM MN 1363-2000
Tyrosine	0,20	MFM MN 1363-2000
Cysteine	0,03	MFM MN1363-2000
Valin	0,31	MFM MN1363-2000
Methionine	0,06	MFM MN 1363-2000
Phenylalanine	0,08	MFM MN 1363-2000
Leucine	0,17	MFM MN 1363-2000
Isoleucine	0,03	MFM MN 1363-2000
Lysine	0,04	MFM MN 1363-2000
Tryptophan	0,03	MFM MN 1363-2000
Proline	0,02	MFM MN 1363-2000

The amino acid composition of raw materials was also studied according to the regulatory document MFM MN 1363-2000. The results of the analyses are shown in Table 1.

According to the literature data, there was evidence that Juzgun medicinal plants contain Benzoic acid, which has a number of advantages. To determine the content of benzoic acid in Juz-

gun, the samples were transferred to the accredited laboratory «Nutritest». But according to the results of research, no benzoic acid was found in the raw materials (Table 2).

Table 2 - Physico-chemical parameters of the Juzgun plant

Name of indicators, units of measurement	Permissiblenormsfor ND	Actuallyreceived	Designation of ND for test methods
1	2	3	4
Physico-chemical: Benzoic acid and its salts	-	Notdetected.	GOST 33332-2015

Production of a pilot batch of ready-to-feed feed pellets based on vegetable raw materials Juzgun and phytosorbent for veterinary purposes

The main raw material for the production of the granular form of the veterinary drug Carbojuz is Juzgun and a phytosorbent.

The granular form of the veterinary drug Carbojusa is a solid metered cylindrical dosage form, which is a compressed mixture of two medicinal substances. The size of the granules is 4-5 mm diameter, weight - 0.7 - 0.8 g.

Composition of granules "Karbojusa", active substance:

– juzgun – 60%;

– phytosorbent – 25%.

– auxiliary substance:

– Binders Carboxymethylcellulose (CMC) - 15%.

The technological process of production of pellets «Karbojuza»» consists of the following stages (Fig.6):

I. Preparation of production facilities and equipment.

II. Training of technical specialists.

III. Preparation of raw materials.

IV. Drying;

V. Grinding.

VI. Granulation;

VII. Packing.

Conclusion. The chemical composition and identification of biologically active compounds in the vegetable raw materials of the Juzgun leucocladum were investigated. Physico-chemical studies have been carried out. The elemental composition of raw materials was determined, the main elements C - 53.53%, O - 31.96%, Ca - 5.56%, K - 4.01%, Na - 2.18%.

The mass fraction of moisture and ash in the raw materials was determined. According to the results of the analysis, the mass fraction of moisture is 5.91 ± 0.03%, and the mass fraction of ash is 7.23 ± 0.01%.

The morphology of the raw materials was investigated, and the amino acid composition of the raw materials was also determined.

As a result of the research, the first samples of an antibacterial veterinary drug based on plant raw materials Juzgun and a phytosorbent were obtained for further clinical study of determining the antibacterial ability of samples to the Faculty of Veterinary Medicine of the Kazakh Agrotechnical University named after S. Seifullin.

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АНТИБАКТЕРИЯЛДЫ ВЕТЕРИНАРИЯЛЫҚ ПРЕПАРАТТЫ АЛУ МАҚСАТЫНДА ЖҮЗГІН ДӘРІЛІК ӨСІМДІГІНІҢ ХИМИЯЛЫҚ ЖӘНЕ БИОЛОГИЯЛЫҚ ҚҰРАМЫН ЗЕРТТЕУ

Түйіндеме. Жүзгін (лат. Calligonum) – қарақұмық тұқымдасына (лат. Polygonaceae) жататын көпжылдық жапырақты бұталы бұталар тұқымдасы. Кейбір мәліметтер бойынша, тұқым 158-ге дейінгі өсімдіктерді қамтиды, бірақ тұқым аз зерттелгендіктен, оған жатқызылған кейбір түрлердің анықтамасы нақты емес. Оның үстіне, кейбір ғалымдар географиялық тұрғыдан анықталынбағандықтан әрі көптеген морфологиялық айырмашылықтарға байланысты оны анықтаудың мүмкін еместігін айтады. Жүзгін тұқымдас өсімдіктердің химиялық құрамында таниндер, лимон және фенол-карбонды қышқылдары, алкалоидтар, лейкоантоцианидиндер, флавоноидтар бар. Жүзгін тұқымдас өсімдіктер әлеуетті түрде дәрілік шикізат көзі бола алады. Ғалымдар олардан гипотензивті дәрі ретінде әсер ететін, өтті айдайтын фенол карбон қышқылдарын тапты. Ісікке қарсы әрекет ететін тек қана лейкоантоцианидиндер ғана емес, сонымен қатар бірқатар флавоноидтар де кездеседі. Жүзгінлейкокладум өсімдік шикізатының химиялық құрамы мен биологиялық белсенді қосылыстардың идентификациясы зерттелді. Физикалық-химиялық зерттеулер жүргізілді. Шикізаттың элементтік құрамы анықталды. Шикізаттың морфологиясы зерттеліп, шикізаттың аминқышқылдық құрамы анықталды. Жүзгін өсімдік шикізаты негізіндегі ветеринарлық препараттың және ветеринарлық мақсаттағы фитосорбенттердің алғашқы үлгілері алынып, клиникалық зерттеуге жіберілді.

Түйінді сөздер: жүзгін, фитосорбент, ветеринарлық препарат, өсімдік шикізаты, элементтік талдау, химиялық заттар.

ИССЛЕДОВАНИЕ ХИМИЧЕСКОГО И БИОЛОГИЧЕСКОГО СОСТАВА ЛЕКАРСТВЕННОГО РАСТЕНИЯ ДЖУЗГУНА БЕЛОКОРОГО ДЛЯ ДАЛЬНЕЙШЕГО ПОЛУЧЕНИЯ АНТИБАКТЕРИАЛЬНОГО ВЕТЕРИНАРНОГО ПРЕПАРАТА

Аннотация. Джузгун (лат. Calligonum) - род многолетних листопадных ветвистых кустарников из семейства Гречишных (лат. Polygonaceae). По некоторым данным, в род входит до 158 растений, но поскольку род плохо изучен, определение видов, входящих в него, считается неточным. Более того, некоторые ученые утверждают, что это невозможно из-за многочисленных морфологических различий, которые не имеют географической определенности. В химическом составе растений из рода Жузгун обнаружены дубильные вещества, лимонная и фенолкарбоновая кислоты, алкалоиды, лейкоантоцианидины, флавоноиды. Растения из рода Жузгун потенциально могут служить источником лекарственного сырья. Ученые обнаружили в них фенолкарбоновые кислоты, которые оказывают желчегонное действие, действуя как гипотензивное средство. Противоопухолевым действием наделены не только лейкоантоцианидины, присутствующие в представителях рода, но и ряд флавоноидов. Мы исследовали химический состав и идентификацию биологически активных соединений в растительном сырье жузгунлейкокладума. Были проведены физико-химические исследования. Определен элементный состав сырья. Была исследована морфология сырья, а также определен аминокислотный состав сырья. Получены и направлены на клиническое исследование первые образцы ветеринарного препарата на основе растительного сырья Жузгун и фитосорбентов ветеринарного назначения.

Ключевые слова: джузган, фитосорбент, ветеринарный препарат, растительное сырье, элементный анализ, химикаты.

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