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LAGOCHILUS INEBRIANS BGE DRY EXTRACT FROM THE PLANT

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Annotation: *In this article Information on obtaining the dry substance of Lagochilus inebrians Bge plant by extracting it in water and studying its optimal conditions is presented.*

Key words: *lagochilus inebrians, water, extract, substance, inebrin, tablet, lagochyline diterpenoid.*

INTRODUCTION

Lagochilus has long been known for its healing properties, i.e. as a hemostatic agent, and it is one of the most popular, effective hemostatic medicinal plants of the East. Decoctions and tinctures based on the Lagochilus plant have been used in practice to stop various bleedings. The pharmacology of Lagochilus plant species was studied at the pharmacology departments of the Kuban, Samarkand, Andijan medical universities. Of these, aqueous and alcoholic decoctions of Lagochilus inebrians have been identified as having physiologically active properties such as sedative, hypotensive, sedative, anti-shock, anti-radiation and anti-allergic (anti-allergic) in addition to hemostatic properties[1-2].

The Lagochilus inebrians plant grows in the Nurota district of the Navoi region of Uzbekistan and in the village of Navandak, Mirdosh Langar, Akmal Ikromov collective farm of the Khatirchi district, on the banks of the river and in the rocky areas. It is also found in Bukhara and Kashkadarya regions. It was grown in the village of Darmana in the former Frunze state farm of Shymkent province. It grows wild in the villages of Ko'shrabot, Gujumsoy, Bozorjoy, Jush, Samarkand region.

O.Sadikov and S.Yu.Yunusov created a unique scientific school in obtaining natural medicines from medicinal plants. In 1956, the Scientific Research Institute of Chemistry of Plant Substances was established in Uzbekistan and it was headed by S.Yu.Yunusov. In 1946, the Department of Chemistry of Natural Compounds was founded at the Faculty of Chemistry of Tosh State University (now UzMU) and headed by O.Sadikov. In 1956, a problem laboratory was established under this department.

Large scientific research works on the study of medicinal plants were carried out in the department and laboratory. As a result, several medicines were created and introduced into medicine and agriculture, dozens of doctors of science and many candidates of science in this field were born.

Decoctions and tinctures based on the Lagochilus plant are used in practice to stop various bleedings. Among the academicians who contributed to the development of this field are O.Sadikhov, S.Yu.Yunusov, N.Q.Abubakirov, I.P.Tsukervanik, Sh.I.Salikhov, B.T.Ibragimov, A. .S. Turaev, doctors of science, professors Kha.A. Aslanov., A.I. Ismoilov., P.Yu. Yuldashev., Kha.A. Abduazimov., M.I. Ikramov., I.E. Akopov., Kh. A. Aslanov., U.N. Zaynutdinov., D.N. Dalimov., Z.I. Mavlankulova., S.I. Muhamedkhanova., V.B. Leontev., Islamov R., A. Saidkhodjaev., V .Malikov., I.K.Komilov., M.I.Sultonov., U.B.Zokirov., S.S. Sahobiddinov., Kh.Kh. Kholmatov., R.L. Khazanovich and others had great services.

THEORETICAL PART

Lagochilus inebrians is a perennial herb growing to 20-60 cm tall. the stem is branched, ascending, woody at the base, four-sided, covered with hard glandular hairs. The leaf is simple, cut into three to five parts, oppositely located on the stem and branches. The flowers are pink, arranged in the form of semicircles on the stems and branches. The fruit is 4 nuts and blooms in June-September. Harvest time for Lagochilus inebrians is July-August. Lagochilus inebrians Bge plant and its flower and seeds are shown in Fig. 1.[3-4]

Figure 1. The plant Lagochilus inebrians Bge.

The chemical composition of Lagochilus inebrians plant contains vitamin K1, 0.6-1.97% lagoxilin, 0.67% flavonoid glycosides, 44-77 mg% ascorbic acid, 6-7% organic acids, 5-10 mg% carotene, 9.66 - 12.42% tar, 2.58-2.78% additives and other substances, as well as calcium and iron salts. Lagochilus inebrians leaves contain lagoxilin, 0.03% essential oil, 11-14% flavoring agents, organic acids, 7-10 mg% carotene and 77-100 mg% vitamin C. [3-4].

From plants removable preparations : tincture, decoction , tincture , extract, extract-concentrate, tablet and hakazos enters _ Extracts as , a plant from raw materials biological active substances water , alcohol, ether or another separators using separate received and separator partly , sometimes completely evaporated to allocation

it is said . Extracts liquid , thick and to the dry ones is divided . Of these the most many p used is a dry extract . Dry extracts are _ medicine plant from raw materials removable concentrated allocation and contains up to 5% humidity which keeps scattered powder is considered Dry extracts work release : deduction get , lie down of substances cleaning , steaming or drying , grinding , sifting , evaluation and packing like technological from stages consists of [5-7].

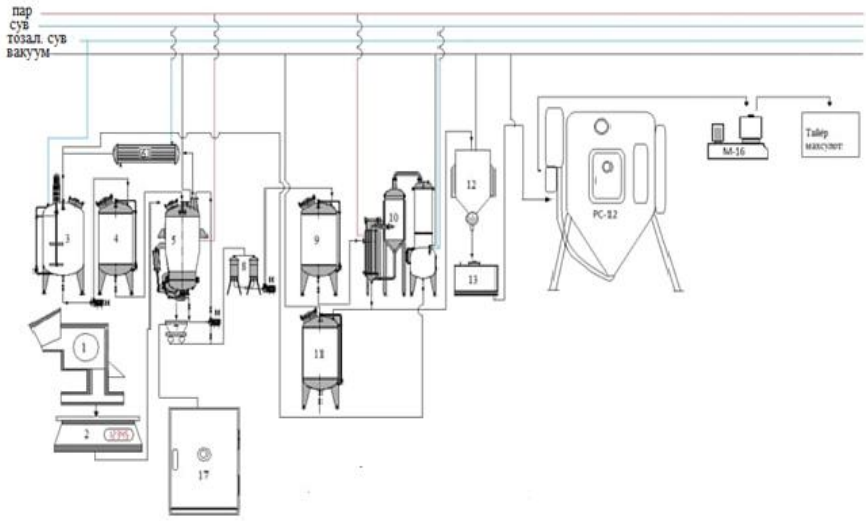
DISCUSSION OF RESULTS

Lagochilus inebrians Bge plant extraction processes of inebrine dry extract substance obtained by maceration method were studied. For this OzR FA Chemistry of plant substances At the institute's experimental production facility, a device was assembled that allows extraction methods to be carried out in extractors with a capacity of 1100 l, and the experiments were carried out as follows. [5-10].

Lagochilus inebrians Bge to the extraction device 100.0 kg of the plant was crushed to a size of 4-6 mm and 1000.0 l (hydromodule 1:4) of water was poured, then water vapor was sent to the "steam jacket" of the extractor and heated to a temperature of 60 °C. The extract was withdrawn from the lower part of the extractor by means of a specially installed pump, and then drained from the upper part of the extractor by rain. The circulation rate of the extract was 100 l/h. The process was carried out until the equilibrium of mass transfer in the phases was established. For this, the yield of extractives was analyzed every half hour. At the end of the extraction process, the extract (500, l) was poured and 500,0 l of water was added and the extraction process was carried out under the same conditions as the first one. Extraction was performed three times in this way and *Lagochilus inebrians Bge* The technological process and apparatus scheme for extracting dry extract from the plant was developed. *Lagochilus inebrians Bge* the plant was crushed in a mill (1) in size 4-6 mm, weighed on a scale (2), placed in an extractor (5) in the amount of 100 kg, 1000 l of purified cold water was added from the measuring device (3, 4) and boiled for 20 hours for a day. In this method, the raw material was extracted 2 times. The resulting 1500 l extract was filtered on a notch filter (8) and collected in a vessel (9) and condensed in a vacuum evaporator (10) until 75 l, that is, 15% of the dry residue, and cooled (12). Then (13) was poured into a vessel and spray-dried in an Anhydro No. 2 (Denmark) device . It was dried in a spray dryer with hot air inlet at 170°C, outlet at 80°C, air pressure 0.2 MPa for 50 minutes (RS-12). The dry extract substance (M-16) with a content of not less than 16-17% of the obtained product was crushed and packaged as a finished product. The technological process and equipment scheme for extracting dry extract from the plant was developed (Scheme 1).

Scheme 1

Technological scheme of the process of obtaining "Inebrin" substance



Scheme 1. (1-mill, 2-scale, 3,4- (purified water at 60°C) tank, 5,6,7-extractor, refrigerator, cart for shrew, 8-filter, 9-tank for filtered extract, 10-vacuum evaporator equipment, 11-container for extracted solvent, 12- (for cooling) separation funnel, 13-container, RS-12 spray dryer, M-16 grinder, 17- drying cabinet, SO 2 - extractor .

Currently *Lagochilus inebrians Bge* vacuum, microwave and other various drying devices are widely used in drying plant extracts [10 ; internet resource]. But the extracts obtained by these methods do not meet the requirements in terms of color, moisture and other indicators. It should be noted that this dry extract is a product in the form of briquettes. *Lagochilus inebrians Bge,* which has a moisture content of no more than 8-11% by weight and is powdery, is currently available in the world. dry extracts from the plant are in high demand. (" *Lagochilus inebrians Bge* plant extract" FS 42 Uz-2535-2018 Therefore, we conducted our research to obtain a dry extract that meets these requirements, *Lagochilus inebrians Bge* was focused on determining optimal conditions for drying the plant extract in a spray dryer .

We carried out our studies on drying our extracted extracts in the "ZPG 150" (PRC) spray drying device, which allows drying 200 l of solution per hour in the GMP scientific and technological center launched under the Institute of Chemistry of Plant Substances . Factors affecting the process were selected and their influence on the drying process was selected, taking into account that the solution being dried in the ZPG 150 dryer is fed through a drum with the ability to rotate at different speeds.

In the extract spray dryer, the extract sprayed through a drum is dried using heated air. The temperature of the air entering the device and leaving the device while keeping moisture in it is of great importance in obtaining the dried extract of standard moisture. For this reason, the influence of heated air at the inlet and outlet of the device, which is one of the main factors affecting its yield and quality, was studied.

The experiments were carried out as follows: 100.0 l of extracts taken for the experiment were dried at different temperatures in the ZPG 150 drying device, and the obtained dry extracts were analyzed (Table 1).

Table 1

The temperature of the air entering and leaving the dryer effect on yield and quality of dry extract

Air temperature , °C		Moisture percentage in dry extract , %	Dry extract yield , kg
access	exit		
150	70	8, 1-8,5	Does not meet the condition of FS
160	75	6 , 0-6.8	Does not meet the condition of FS
165	85	4, 2- 4,8	11 , 2
170	90	3 , 0-3.6	Does not meet the condition of FS
175	95	2 , 1-2,8	Does not meet the condition of FS

Studies take on the go air temperature A high percentage of moisture in the extract was observed when the inlet temperature was 150 °C and the outlet temperature was 70 °C. This indicates that the degree of formation of the solution at this temperature is low. The low yield of the finished product is explained by the fact that the extract is partially stuck at the bottom of the drying chamber of the device. Even when the air temperature is 160 °C at the inlet and 75 °C at the outlet, the moisture content of the extract is high. Therefore, the temperature of the heating air in the spray drying unit of the aqueous extract obtained *from the Lagochilus inebrians Bge plant was set to 170±5 °C at the inlet and 80-90±5 C at the outlet . °*

To study the effect of extract concentration on the drying process, the prepared extract was divided into five equal parts. Then the extracts of each part were concentrated to different concentrations. The concentrates were dried in a multi-layer drying device at a temperature of 170 ± 5 °C at the inlet and 80 ± 5 °C at the outlet and analyzed (Table 2).

Table 2

The effect of the concentration of the extract supplied to the drying device on the yield and quality of the dry extract

The proportion of dry substances in the solution, %	Moisture content in dry extract , %	Dry extract unumi , kg	Color of dry extract
5	8.6	9.4	Yellow
10	4 , 8	11.2	Yellow
15	**4 , 2**	**11.1**	**Orange**
20	2 , 4	10 , 4 _	Does not meet the condition of FS
25	1, 7	9 , 6	Does not meet the condition of FS

From the experimental results presented in Table 2, it can be seen that the percentage of moisture in the dry extract obtained during the drying process decreases with the increase in the concentration of the solution, but the color of the product does not meet the requirements of the normative technical document. At the same time, when the percentage of dry matter in the extract was 5%, it was observed that the extract was partially covered at the bottom of the drying chamber of the device, and when it exceeded 20%, the finished product mixed with air increased, so the yield of the dry extract decreased compared to other concentrations, that is, the loss increased. Therefore, *it was concluded that the percentage of extractives in the extract should be 15±2% when drying the aqueous extract obtained from the plant Lagochilus inebrians Bge in a spray dryer.* [5-11].

SUMMARY

1. *Lagochilus inebrians Bge* The temperature of the heating air in the spray drying unit of the aqueous extract obtained from the plant was set to 170 ± 5 °C at the inlet and 80-90 ± 5 C at the outlet .°

2. *Lagochilus inebrians Bge* it was concluded that the percentage of extractive substances in the extract should be 15±2% when drying the aqueous extract obtained from the plant in a spray dryer. *Lagochilus inebrians Bge* optimal conditions for drying the extract obtained from the plant in a spray dryer were determined.

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