



## DETERMINATION OF THE AMOUNT OF MINERAL ELEMENTS CONTAINED IN THE INEBRIN SUBSTANCE

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Article history:	Abstract:
<b>Received:</b> 11 <sup>th</sup> March 2023 <b>Accepted:</b> 20 <sup>th</sup> March 2023 <b>Published:</b> 20 <sup>th</sup> May 2023	This article presents information about the plant <i>Lagochilus inebrians</i> Bge and the determination of the amount of micro and macro elements in the Inebrine substance.
<b>Keywords:</b> lagochilus inebrians, water, extraction, substance, inebirin, tablet, lagochilin diterpenoid, spectrometry.	

### INTRODUCTION

From the analysis of the literature, it can be seen that the plant of *Lagochilus* species has been known since ancient times for its healing properties, i.e., as a hemostatic agent, and it is among 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. 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. Academicians 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.K. Kholmatov., R.L. Khazanovich and others' services are incomparable.[1-2].

### THEORETICAL PART

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 Koshrabot, Gujumsoy, Bozorjoy, Jush, Samarkand region.

*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]



**Fig. 1.** *Lagochilus inebrians* Bge plant and its flower.

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].

Preparations obtained from plants include: tincture, decoction, tincture, extract, extract-concentrate, tablets and hakazos. Extracts are biologically active substances extracted from plant raw materials using water, alcohol, ether or other separators, and the separator is partially, sometimes completely evaporated. Extracts are divided into liquid, thick and dry. The most commonly used of these is the dry extract. Dry extracts are a concentrated extract obtained from medicinal plant raw materials and are dispersible powders containing up to 5% moisture. The production of dry extracts consists of technological steps such as separation, removal of foreign substances, evaporation or drying, grinding, sieving, evaluation and packaging. [5-7].

## DISCUSSION OF RESULTS

The amount of macro and microelements of inebrine substance was determined and studied based on the method of optical emission spectrometry with "inductively coupled with argon plasma" using the Optima-2100DV (USA) device and the Autosampler S-200 Perkin Elmer device. The inebrine substance was finely ground and a 0.1 g sample was weighed with an accuracy of  $\pm 1$  mg using an analytical balance. The sample is placed in autoclaves made of Teflon, and 2 ml of nitric acid solution and 1 ml of hydrogen peroxide solution are added to it. It is decomposed by heating at 40 °C and after cooling it is heated again to 25-40 °C. After digestion, sample solution Autoclave 5-10 ml of deionized LaboStar PRO UV 4, 1.5 l/min, with water from Evoqua (SG Wasser) apparatus, rinse 3 times with 50 ml volumetric flask and top up to the mark with deionized water until volume reaches 50 ml has been filled. The amount of macro and microelements in the sample of inebrin substance was determined by the device based on the method of optical emission spectrometry with "inductively coupled argon plasma". After receiving the data from the device, the final processing is performed by Win-Lab (offline) hardware. The device automatically calculates noise, the shape of the solution in the specified places of the studied elements. The standards use a multi-element standard solution. The analysis is repeated 5 times and the arithmetic mean is calculated. The RSD for each element should be between 0.01 and 1.0%. Used in the S-200 Perkin Elmer autosampler, the power of the generator is 1500 W, the peristaltic speed of the pump is 1.2 ml/min, the argon flow is 12-15 l/min, the plasma observation-axial point is 0.8 l/min. The results of determining the amount of macro and micro elements in the inebrin substance sample are presented in Table 1.

**Table 1**  
Determining the amount of micro and macroelements in the inebrine substance (mg/kg).

Nº	elem ent	Name of element	Amount macro micro elements (µg)	Nº	Elem ent	Name of element	Amount of macro and micro elements (µg)
1	Li	Lithium	10.604	23	As	Arsenic	0.291
2	Be	Beryllium	0.067	24	Se	Selenium	0.062
3	B	Borium	44.414	25	Rb	Rubidium	4.306
4	Na	Sodium	1413.808	26	Sr	Strontium	33.993
5	Mg	Magnesium	4500.114	27	Zr	Zirconium	0.009
6	Al	Aluminum	7.836	28	Nb	Niobium	0.000
7	Si	Silicon	389.881	29	Mo	Molybdenum	0.114
8	P	Phosphorus	641.518	30	Ag	Silver	0.006

9	S	Sulfur	893.491	31	Cd	Cadmium	0.003
10	K	Potassium	19336.865	32	In	Indium	0.000
11	Ca	Calcium	6933.788	33	Sn	Tin	0.022
12	Ti	Titanium	-12.660	34	Sb	Antimony	0.008
13	V	Vannadium	0.096	35	Cs	Cesium	0.065
14	Cr	Chromium	0.600	36	Ba	Barium	1.460
15	Mn	Manganese	15.867	37	Ta	Tantalum	0.000
16	Fe	Iron	156.107	38	W	Tungsten	0.004
17	Co	Cobalt	0.135	39	Re	Rhenium	0.002
18	Ni	Nickel	1.195	40	Hg	Mercury	0.126
19	Cu	Copper	1.049	41	Tl	Thallium	0.003
20	Zn	Zinc	2.820	42	Pb	Lead	0.371
21	Ga	Gallium	0.130	43	Bi	Bismuth	0.000
22	Ge	Germanium	0.001	44	U	Uranium	0.012

The information in the table shows that the amount of micro- and macroelements in Inebrin substance contains 44 elements, V (44,414 mg/kg), Na (1,413,808 mg/kg), Mg (4,500,114 mg/kg), Al (7,836 mg/kg), Si (389.881 mg/kg), P(641.518 mg/kg), S (893.491 mg/kg), K (19336.865 mg/kg), Ca (6933.788 mg/kg), Cr (1.106 mg/kg), Mn (15,867 mg/kg), Fe (156,107 mg/kg), Cu (1,049 mg/kg), Zn (2,820 mg/kg), Sr (33,993 mg/kg), Ba (1,460 mg/kg), the amount of other elements it turned out to be relatively large[8-11].

## SUMMARY

The amount of micro- and macroelements contained in inebrian substance was determined, including B (44,414 mg/kg), Na (1,413,808 mg/kg), Mg (4,500,114 mg/kg), Al (7,836 mg/kg), Si (389,881 mg /kg), P(641.518 mg/kg), S (893.491 mg/kg), K (19336.865 mg/kg), Ca (6933.788 mg/kg), Cr (1.106 mg/kg), Mn (15.867 mg/kg), Fe (156,107 mg/kg), Cu (1,049 mg/kg), Zn (2,820 mg/kg), Sr (33,993 mg/kg), Ba (1,460 mg/kg), it was found that the amount of elements is more than others

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