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DETERMINATION OF MICRO AND MACRONUTRIENTS IN THE ROOTS OF ACORUS CALAMUS L

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Abstract
This article determines the composition of micro and macroelements in the root of the medicinal plant Acorus calamus L and provides information on its use in medicine.

Keywords: Acorus calamus L, essential oil, pinen, camphor, camphor, sesquiterpene alcohols, calamine, proazulene, gayne borneol,

Introduction

Today, in order to develop a technology for preparing new types of medicinal natural products based on local natural products, young scientists are being directed to produce scientific work and obtain finished products. The resulting product can satisfy the domestic needs of our Republic and create the opportunity to export to foreign countries. Also, special attention is paid to the fact that if the production of the product is established, jobs will be created, the number of unemployed will decrease, and the price of the products will become cheaper. Developing technologies for products made from the medicinal plant Acorus calamus L, which is highly valued in terms of its medicinal properties, is one of the current topics in terms of increasing employment, reducing the number of unemployed, providing employment to our people, and developing commodity production. Medicinal preparations of the plant Acorus calamus. Decoction. The rhizome is included in bitter tincture, bitter root tincture, and decoctions-teas used for stomach diseases and to stimulate appetite. The essential oil of the rhizome of Acorus calamus is included in the drug "Olimetin" used in the treatment and prevention of kidney and biliary tract stones, and the rhizome powder is included in the drugs "Vicalin" and "Vikair" used in gastric and duodenal ulcers. [1-7]

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Theoretical Part:

Acorus calamus L, a common cow, belongs to the Araseae family. Moldova, Ukraine, Belarus, the Baltic, South of the European part of Russia; swamp grows in grasslands and swamps. The product is mainly produced in Belarus and Ukraine, but can be harvested in the middle stream of the Kazakh and Amur rivers. [8-11]

Acorus calamus L is a perennial herbaceous plant with 1.5 m long, horizontal, reptile, branched and multicellular, with dark brown or greenish-yellow color. At the top of the rhizome is a collection of leaves. Leaves are linear or sword-like, 60-120 cm long, with straight edges and parallel veins (typical of single-stage plants). The stem (flower arrow) is green, upright, not branched, triangular, leafless, on one side, with sharp edges. At the stem there are two sexy, yellow flowers that are collected on the stem. The cone is cylindrical-cone-like, 4-12 cm long. Flower bouquet - a 50 cm long leaf-shaped leaf is visible from the stalk. The flowerpot is modest, simple, six-leafed, six-parent, three-room maternity knot. The fruit is elongated with many seeds and with a damp red fruit. The roots and leaves are odorless, the tiny roots are odorless. It blooms from late May to July. Land surface of Acorus calamus L Fig. 1 [8-11]

Figure 1. Above-ground and root parts of Acorus calamus L.

The product of the Acorus calamus harvest is covered with an orange brown probe, cylindrical, slightly flattened, bent and light, up to 30 cm long and 0.5 to 1.5 cm thick. At the top of the rhizome are crooked, dried stems, leafy leaves and numerous small, rounded roots at the bottom. The rootstock is flat-fractured, with holes in the inside, pale and sometimes yellowish. The product has a very pleasant aroma and aroma.

Acorus calamus plant root chemical. Contains up to 5% of essential oil, bitter chord glycoside, excipients, resin and up to 25.5% starch. Leaves of the Acorus calamus plant contain essential oil, up to 150 mg% of vitamin C and supplements. According to XI DF, the whole rhizome should not contain 2% of the essential oils and less than 1.5% of the powder and powder product. Essential oil is yellow, dark liquid with a density of 0,9491-0,9547, refraction number 1,4990-1,5065, angle of polarized light + 8- + 18,70. Essential oil contains 1% pinene, 7% camphor , Contains 8.7% camphor, 3%

borneol, 17% sesquiterpene alcohol, 10% calamine, proazulene, chloramphenicol, shiobunon, acarone, guaien, acetic and valerian acids and other compounds

Acorus calamus herbs are used in medicine as a flavoring agent to improve appetite and digestion. Previously it has been used to treat kidney, liver and gall bladder diseases. Acorus calamus rhizome is also used in the perfumery and food (liqueur) industry.

Discussion of Results

The amount of macro and microelements in the root of the plant Acorus calamus has been performed using the Optima emission spectrometer Optima-2100DV with inductively coupled argon plasma. Sample solutions for this have been delivered to the wells in the autosporter, and final processing is performed by the Win-Lab (offline) apparatus. The device automatically calculates the noise, the form of the solution at the specified locations of the studied elements. The obtained results and spectrum analysis were performed automatically by "multispectral analysis". The results of these studies are presented in the Table 1.

Table 1 The amount of macro and micro elements in the root of the plant Acorus calamus.

№	Items of elements	The amount of macro and micro elements in the root of the plant	№	Items of elements	The amount of macro and micro elements in the root of the plant
1	Al	1127,461	**23**	S	-87,728
2	Ba	112,811	**24**	Ti	48,355
3	Bi	0,109	**25**	Gr	7,019
4	Ca	46792,231	**26**	Co	1,029
5	Fe	2433,533	**27**	Cu	41,009
6	K	24174,433	**28**	Ga	3,990
7	Li	1,202	**29**	Ge	0,018
8	Mg	3363,596	**30**	As	0,632
9	Na	5238,032	**31**	Zr	1,370
10	Mn	98,248	**32**	Nb	0,090
11	Rb	9,539	**33**	Mo	2,270
12	Se	0,233	**34**	Ag	0,036
13	Sr	274,031	**35**	Cd	-0,019
14	V	2,045	**36**	In	-0,033
15	Zn	42,156	**37**	Cs	-0,030
16	P	7992,102	**38**	Ta	0,404
17	Pb	2,472	**39**	W	0,309
18	Ni	10,906	**40**	Re	-0,001
19	Be	-0,007	**41**	Hg	0,133
20	B	36,354	**42**	TI	-0,255
21	Si	1227,461	**43**	U	0,204
22	Sn	9,790	**44**	Sb	0,124

The data in the table show that 44 element heavy metals, macro- and micro-element quantities in the root of the Acorus calamus L. plant were identified. We can also see that the root contents of the plant contain more than Ca (46792,231 mg/g), K (24174,433 mg/g), P (7992,102 mg/g), Na (5238,032 mg/g), Mg (3363,596 mg/g), Fe (2433,533 mg/g), and other elements.

Experimental section:

Acorus calamus plant roots in the structure of the macro and micro elements amount of inductive link argon plasma optical emission spectrometry method has been determined and studied on the basis of Optima 2100DV (USA) office and Avtodozator S-200, Perkin Elmer device . Acorus calamus. The root of the plant sample was thoroughly ground; 0.1 g of sample was weighed at ±1 mg using analytical scales. The sample was placed in an autoclave made of Teflon and injected with 2 ml of nitric acid and 1 mL of hydrogen peroxide after the autoclave was thoroughly sealed and placed in a microwave breaker BERGHOF with Speebwave TM MWS-3 (the amount of autoclaves is 12). Being heated them for a minute at 25-40 ° C to grind then cool down and again heat them to 25-40 ° C. After completion of decomposition, Sample Solution Autoclave 5-10 ml of anionized LaboStar PRO UV 4, 1.5 l / min, rinsed in 50 ml measuring tube 3 times with water extracted from Evoqua (SG Wasser) and dehydrated in water until the volume was 50 ml. filled with vacuum solution (2% nitric acid). After receiving data from the device, the final processing is done by the Win-Lab (offline). The device automatically calculates the noise, the form of the solution at the specified locations of the studied elements. The standard uses a multi-element standard solution. The analysis is repeated 5 times and is an arithmetic mean. The RSD for each item should be between 0.01 and 1.0%. S-200 used in Perkin Elmer Avtodozator system, generator power - 1500 W, pump peristalysis speed - 1.2 ml / min, argon flow 12-15 l / min, plasma observation point - 0.8 l / min.

Conclusion:

1. Macro and micro elements in the root of the Acorus calamus. plant studied by the Optima-2100DV (US) apparatus on the basis of the optical emission spectrometry method "Inductively coupled argon plasma" contains 44 macro and micro elements. and the amount was quoted. It has been found that calcium, potassium, phosphorus, sodium, magnesium, and iron are high in comparison to other elements.

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