



DETERMINATION OF THE PERCENTAGE OF MICRO AND MACRO ELEMENTS IN THE TANACETUMVULGARE PLANT

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Abstract

In this article, the elements and their compounds contained in the powder of the ground part of the *Tanacetum Vulgare* plant were determined in percentages, and information about their chemical composition and use in medicine is presented.

Keywords: *Tanacetum Vulgare*, wormwood, quercetin, ketone, camphor, borniol, luteolin, rutin, apigenin, antiseptic, anthelmintic, sugar, vitamin C, macro and micronutrients.

Introduction

It is known that for many years it has been used by people. It increases the secretion of the glands of the gastrointestinal tract and tones its muscles. It has an antiseptic, anti-inflammatory and anthelmintic effect, and destroys intestinal parasites. The scientific-practical experiments conducted by scientists create opportunities for the wider use of medicinal plants in medicine. Today, many of our scientists are conducting scientific research in our Republic on the reproduction of medicinal plants and the determination of the amount of micro- and macroelements in their composition, studying their biology.

Theoretical Part

Tanacetum vulgare belongs to the Asteraceae family. Perennial herb, 50-150 cm tall, with a unique smell. The stem is erect, branched, glabrous or slightly hairy. The leaf is simple, feathery, the upper side is dark green, and the lower side is gray-green. The leaves in the lower part of the stem are busy, and those in the middle and upper part are unoccupied, and they are located in a row on the stem. The flowers are yellow, collected in a basket, forming a shield-shaped inflorescence. The fruit is long





pistachio-shaped and blooms throughout the summer. Geographic distribution Moldova, Ukraine, Belarus, the Far North of Russia and Central Asia are also common in the wild. It grows mainly in areas close to populated areas, in meadows, forest edges and water banks, along roadsides, near residential areas and in tree plantations. It is also used as fodder and hay in livestock farming. Flowers and leaves are used in medicine (Fig. 1) [1-4].

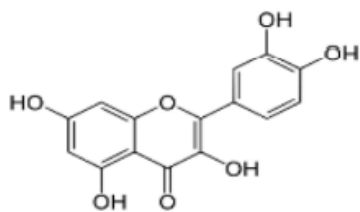


Figure 1. Top and flowers of the plant *Tanacetum Vulgare*

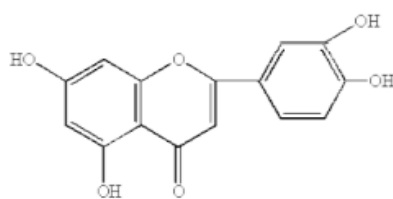
The plant *Tanacetum Vulgare* consists of flowers collected in a hemispherical basket. The flowers in the basket are yellow, tube-shaped, instead of flowers. The basket is covered with 6-8 mm per day, gray-green, lanceolate-shaped general rolled leaves. The flowers on the edge of the basket are three-toothed, and the flowers in the middle of the basket are five-toothed, the interval is 5, the maternal node is one-celled, located below. *Tanacetum vulgare* plant has a characteristic odor similar to camphor and a sharp taste. 13% moisture content of the product, total ash 9%, brown and blackened baskets 8%, other parts of the plant (leaves, some flower clusters longer than 4 cm) 7%, small parts passing through a sieve with a diameter of 2 mm 10% , organic compounds 1% and mineral compounds more than 1%, flower baskets and their parts 60%, and the total amount of flavonoids and phenolic acids should not be less than 2.5% compared to luteolin [1-4].

Chemical composition of *Tanacetum Vulgare* plant. Flower bouquets contain 1.5-2% essential oil, flavonoids (quercetin, luteolin, apigenin, chrysoeriol, diosmetin, isorhamnetin, axillarin, etc.) Fig. 1. Alkaloids, flavoring agents, polyunsaturated lactone (polyene lactone) and tanacetin are bitter substances.

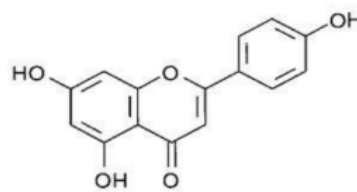
Essential oil contains a and b (up to 47%) thujones, camphor, thujol, borneol, pinene and other compounds.



quercetin



luteolin



apigenin

Fig. 2. Chemical formulas of flavonoids quercetin, luteolin, apigenins contained in *Tanacetum vulgare* plant.

The flower of the plant *Tanacetum Vulgare* is used in medicine to expel worms and to treat liver and intestinal diseases.

Medicinal preparations and tinctures obtained from the flower of the *Tanacetum Vulgare* plant, for example, Tanatsehol preparation (the sum of flavonoids and phenolic acids obtained from the inflorescence is extracted in the form of powder or tablets). The drug is used in medicine as an expectorant. The product is a part of tea-collections used in liver diseases (cholecystitis, hepatitis, etc.) and Zdrenko collection [1-2].

The technology of growing common dastarbosh plant has been developed, and since common dastarbosh is a perennial plant, it can be propagated by planting in autumn and early spring. It grows well in all soils common in Uzbekistan. Taking into account that its root system is well developed, it is advisable to plant it in soils prone to erosion. Protects the soil from erosion. Before plowing in the fall, the plots of ordinary dastarbosh are plowed to a depth of 25-28 cm, fed with local fertilizer and superphosphate. In early spring, the land is harrowed, leveled with a trowel and cleared of weeds. The seed is sown in early spring, when the soil temperature is 15-17°C, along one line, with 60 cm between rows. Since its seeds are small, it is mixed with rotted gung or sand for uniform sowing. Seeds are sown at a depth of 0.5 cm. 7-8 kg of seeds are used per hectare. Seeds planted at the end of March will germinate in 10-12 days. Egates are obtained by cultivation when grasses produce 3-4 true leaves. 1-2 plants are planted in each nest. The distance between the nests should not be less than 10-12 cm. The common weed easily competes with weeds and completely suppresses them in the second year. It is necessary to carry out agrotechnical activities at a high level for good growth and development of the plant and to produce a higher yield. The first feeding of the dastarbosh begins after the sprouting of the plant, with the application of 30 kg of nitrogen and 20 kg of potassium fertilizer per hectare. The starter is more demanding on nutrients. The second feeding corresponds to the period of pruning and requires more phosphorus and potassium fertilizers. In order to



accelerate its growth and development, it is fed with 30 kg of nitrogen, 20 kg of phosphorus and 30 kg of potassium fertilizer per hectare. The height of the plant reaches 1 meter by August of the first year and begins to flower. In its flowering phase, feeding is completed by giving 40 kg of nitrogen per hectare.

Fertilization of the table is carried out before watering. It is processed 8-9 times during the growing season, depending on the air temperature and soil moisture. Watering should be increased in the year when the air temperature is high. Dastarbosh flowers are harvested in the first year. The plant blooms until November and has to be harvested frequently [5-7].

The above-ground part of the *Tanacetum Vulgare* plant is harvested in early spring in the second year, when the flowers in the basket begin to open until the inflorescences emerge. Starter crops can be used for up to 5 years. After harvesting, its raw materials are thinly spread in covered terraces and frequently ventilated. After drying, it is placed in bags of 20 kg or 50 kg tied without compaction. Dastarbosh seeds ripen in October. Ripe flat flowers are cut by threshers and collected in threshers and thoroughly dried and stored in bags for up to 3 years [5-7].

Results and their Discussion

When determining the percentage of micro- and macroelements in the flowers of *Tanacetum Vulgare*, they were determined using the X-ray fluorescence spectrometry method on the Spectro Xepos 111 (SShA) device. Technical parameters of the device: The device has a voltage of 120/230 V, a power of 150 W. was carried out using For this, plant flowers are ground into powder and 5 g are taken into special containers for X-ray analysis, and plant pollen is placed in separate containers on a circular disk. The device analyzes for 20 minutes. After the analysis of the results is complete. The results are automatically displayed on the screen through a computer connected to the device. The results of these studies are presented in Table 1.

Table 1 The amount of micro and macroelements in the flowers of *Tanacetum Vulgare*

No	Element	Name	Amount of macro and micro elements %	Error	No	Element	Name	Amount of macro and micro elements %	Error
1	MgO	Magnesium	<0.014	-	34	Y	Ittiri	0.00014	0.00001
2	Al ₂ O ₃	Aluminum oxide	0.4012	0.0076	35	Zr	Zirconium	0.00028	0.00002
3	Al	Aluminum	0.2124	0.0040	36	Nb	Niobium	0.00019	0.00002
4	SiO ₂	Silicon oxide	2.076	0.011	37	Mo	Molybdenum	0.00010	0.00002
5	Si	Kremny	0.9704	0.0050	38	Ru	Ruthenium	< 0.00002	-



6	P ₂ O ₅	Phosphorus	1.152	0.005	39	Rh	Rhodium	< 0.00002	-
7	P	Phosphorus	0.5027	0.0020	40	Pd	Palladium	<0.00021	-
8	SO ₃	Sulfoxide	1.144	0.003	41	Ag	Silver	< 0.00002	-
9	S	Sulfur	0.4582	0.0013	42	Cd	Cadmium	0.00010	0.00002
10	Cl	Chlorine	0.8849	0.0010	43	In	Indian	< 0.00003	-
11	K ₂ O	Potassium oxide	4.383	0.002	44	Sn	Tin	0.00038	0.00009
12	K	Potassium	3.638	0.002	45	Sb	Do not	< 0.00004	-
13	CaO	Calcium oxide	2.925	0.002	46	Te	Tellurium	< 0.00005	-
14	Ca	Calcium	2.090	0.001	47	I	Iodine	< 0.00006	-
15	Sc	Scandium	0.00475	0.00017	48	Cs	Cesium	< 0.00008	-
16	Ti	Titan	0.00408	0.00004	49	Ba	Barium	0.00086	0.00021
17	V	Vannadium	0.00024	0.00002	50	La	Lanthanu	<0.00015	-
18	Cr	Chrome	0.00017	0.00001	51	Ce	Cerium	<0.00015	-
19	MnO	Manganese	0.01343	0.00004	52	Pr	Prazeodm	< 0.00009	-
20	Mn	Manganese	0.01040	0.00003	53	Nd	Neodymiu	< 0.00002	-
21	Fe ₂ O ₃	Iron oxide	0.05276	0.00033	54	Sm	Samaritan	0.00032	0.00004
22	Fe	Iron	0.03690	0.00023	55	Yb	itterbi	< 0.00020	-
23	Co	Cobalt	<0.00010	-	56	Hf	Gafnium	< 0.00012	-
24	Ni	Nickel	0.00093	0.00003	57	Ta	Tantalum	< 0.00002	-
25	Cu	Copper	0.00192	0.00003	58	W	Tungsten	0.00010	0.00004
26	Zn	Zinc	0.00404	0.00003	59	Au	Gold	<0.00001	-
27	Ga	Gallium	<0.00002	-	60	Hg	Mercury	<0.00001	-
28	Ge	Germany	0.000014	0.00007	61	Tl	Thallium	<0.00001	-
29	As	Arsenic	0.00003	0.00001	62	Pb	Kurgonshn	0.00021	0.00001
30	Se	Selenium	<0.00001	-	63	Bi	Bismuth	< 0.00002	-
31	Br	Bromine	0.00109	0.00001	64	Th	Thorium	< 0.00002	-
32	Rb	Rubidium	0.00089	0.00001	65	U	Uranus	0.00008	0.00001
33	Sr	Strontium	0.00098	0.00001					

The data in the table shows that the content of 56 elements and 9 of its compounds were determined in the flowers of *Tanacetum Vulgare*, and SiO₂ (2.076 %), R₂O₅ (1.152 %), SO₃ (1.144 %), K₂O (4.383 %), K (3.638%), CaO (2.925 %), Ca (2.090 %), the amount of elements and its compounds was found to be more than others [8-9]. When determining the amount of micro- and macroelements in the flowers of the *Tanacetum Vulgare* plant, it was determined using the X-ray fluorescence spectrometry method on the Spectro Xepos 111 (SShA) device. Technical parameters of the device: The device has a voltage of 120/230 V, a power of 150 W. was carried out using For this, plant flowers are ground into powder and 5 g are taken into special containers for X-ray analysis, and plant pollen is placed in separate containers on a circular disk. The device analyzes for 20 minutes. After analyzing the results. Through a computer connected to the device, the results are automatically displayed on the screen and the research results are written in a table.



Conclusion

The amount of macro and microelements contained in the flowers of *Tanacetum Vulgare* plant "X-ray fluorescent spectrometer Spectro Xepos 111, technical indicator: 120/230V, power 150W. The amount of 56 elements and 9 of its compounds was determined in the flowers of the plant (SShA). (3.638), SaO (2.925 %), Sa (2.090 %), elements and its compounds were found to be more than others.

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