Study of the elemental composition of the above-ground and underground organs of Bodyak field from the flora Bashkortostan S.R. Shamsutdinova, K.A. Pupykina (GBOU VPO "Bashkir State Medical University", Ufa)

The study of the element composition of elevated and underground organs of Cirsium arvense from Bashkortostan flora SR Shamsutdinova, KA Pupykina Bashkir State Medical University (Ufa, Russia)

### RESUME

The results of study of Cirsium arvense element composition growing in Bashkortostan are presented. Comparative analysis of macro and trace elements in elevated and underground parts of Cirsium arvense showed that maximum is achieved in herb. Natrium, calcium, phosphorus, zinc, cuprum, manganum, iodum are prevalent in herb, while potassium and ferrum in roots.

Keywords: Cirsium arvense, herb, roots, element composition

SUMMARY

The article provides information on the study of the elemental composition of the field thistle growing in the conditions of the Republic of Bashkortostan. A comparative assessment of the content of macro- and microelements in the aboveground and underground parts of the field thistle was carried out and it was found that the greatest amount of various macro- and microelements accumulates in the grass of the field thistle. Sodium, calcium, phosphorus, zinc, copper, manganese, iodine predominate, and the roots contain more potassium and iron.

Key words: field thistle, grass, roots, elemental composition.

At the present time, due to the increase in the rate of development of production activities, the environment is under strong man-made pressure. In this aspect, medicinal plants are no exception, therefore, the problem of the ecological purity of medicinal plant raw materials becomes especially urgent. Medicinal plants are able to accumulate not only harmful heavy metals, but also vital macro- and microelements that have a certain effect on the human body, activate enzyme systems, play an important role in plastic processes, the formation of body tissues, maintain acid-base balance, exhibit pharmacological activity [2]. In this regard, it was of interest to us to study the elemental composition of one of the hard-to-eradicate weeds on the territory of the Russian Federation, the field thistle Cirsium arvense (L.) fam. aster (Asteraceae). The root system of the plant is well developed. Stem 50-150 cm tall, erect, branched, furrowed or ribbed, not winged, glabrous or slightly cobweb-pubescent. The leaf arrangement is next. Leaves are green, sessile or short-petiolate, lanceolate, whole or shallowly pinnate, glabrous or slightly cobweb-pubescent below, bristly-ciliate along the edge. Flower baskets are erect lilac or lilac-purple in color, collected in a corymbose-paniculate inflorescence. The chemical composition of the field thistle has not been studied enough, but it is known that it has valuable medicinal properties and is used in folk medicine as an anti-inflammatory,

The aim of our research was to study the elemental composition of grass and roots field thistle growing in the Republic of Bashkortostan.

### Materials and methods

Definition elemental <sub>composition</sub> carried out method atomic absorption spectrometry. Samples of the studied samples of raw materials were ashed, the resulting residue was treated with hydrochloric acid with slow evaporation in a water bath. Standard metal samples were used as a comparison. The conclusion about the percentage of elements was made according to the level of intensity of the signal of the device.

# Results and its discussion

The study of the content of macro- and microelements in the studied samples of grass and roots of thistle is of interest in connection with the high biological role of individual chemical elements. In the etiology of many diseases, an essential role is played by metabolic disorders in the human body at the subcellular, tissue and organismal levels. This is how the correlations between their imbalance and various pathologies are noted. In many diseases, there is a decrease in the level of trace elements, therefore, the search for new types of plant materials as valuable additional sources of trace elements is an urgent task [1, 3]. The results of the study are presented in table. one.

Analyzing the results obtained, it can be noted that the greatest amount of sodium, calcium, phosphorus, zinc, copper, manganese and iodine accumulates in the grass, and potassium and iron predominate in the roots.

Table 1

Наименование элементов	Количественное содержание элементов Макроэлементы, <sup>с</sup> е	
	Калий	1,64
Натрий	0,20	0,01
Кальций	1,46	0,60
Фосфор	0,15	0,11
	Микроэлементы, мг/кг	
Цинк	98,36	79,93
Железо	158,19	301,27
Медь	2,24	2,00
Марганец	512,30	395,75
Йод	0,18	0,01

### Elemental composition in samples of raw material of the field thistle

#### Conclusions:

1. Studied the elemental composition of the aboveground and underground parts of the field thistle from flora Bashkortostan and it was found that a more diverse spectrum of macro- and microelements is presented in the herb of the studied plant.

2. It was revealed that the greatest amount of sodium, calcium, phosphorus accumulates in the grass, zinc, copper, manganese and iodine, and potassium and iron predominate in the roots.

# Literature

1. Avtsyn A.N., Zhavoronkov A.A., Rish M.A. etc. Human trace elements (etiology, classification, organopathology). - M .: Medicine, 1991 .-- 495 p.

2. Kleptsova I.A., Volkotrub L.P., Karavaev N.R. Features of technogenic pollution medicinal plants / // Pharmacy. - 2001. - No. 5. - P.28–29.

3. Nozdryukhina L.R., Grinkevich N.I. Violation of trace element metabolism and its ways correction. - M .: Nauka, 1980 .-- 280 p.

4. Keys to higher plants of the Bashkir ASSR: Sem. Brassicaceae - Asteraceae / AN USSR, UO BNTs, Institute of Biology; [YU. E. Alekseev and others]; otv. ed. E.V. Kucherov, A.A. Muldashev. - M .: Publishing house "Science", 1989 - 374 p.

Author's address Doctor of Pharmacy, prof. Pupykina K.A., Professor of the Department of Pharmacognosy with a course of botany and the basics of phytotherapy pupykinak@pochta.ru

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