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One of the important stages of medicinal plant raw materials standardization is the establishment of qualitative and quantitative characteristics of its biologically active compounds. Black poplar buds are described in British Herbal Pharmacopoeia (BHP) as medicinal plant raw material [3], but there are no requirements to its quality in the Ukrainian State Pharmacopoeia. Taking into account the pharmacological potential of the black poplar buds, we consider important to carry out a comprehensive pharmacological and phytochemical research of black poplar raw material (buds) for experimental and theoretical substantiation of new approaches to its standardization and the creation of medicines on its base.

Phenolic compounds, including hydroxycinnamic acids and flavonoids of aglycone nature, are primary biologically active compounds of black poplar buds. We chose caffeic acid, chlorogenic acid (hydroxycinnamic acids) and quercetin (flavonols' aglycone) as marker substances (fingerprints) to further standardization of the collected plant raw material.

References:

1. Debbache N, Atmani D, Atmani D. Pharmacological potential of Populus nigra extract as antioxidant, anti-inflammatory, cardiovascular and hepatoprotective agent. Asian Pacific Journal of Tropical Biomedicine, 2013; 3(9): 697-704.
2. Maack A., Pegard A. Populus nigra (Salicaceae) absolute rich in phenolic acids, phenylpropanoïds and flavonoids as a new potent tyrosinase inhibitor. Fitoterapia, 2016; 111: 95-101.
3. British Herbal Pharmacopoeia (BHP). – U.K.: British Herbal Medicine Association, 1996: 31.

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The study of the Verbascum thapsus L. herb element content

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Common mullein (*Verbascum thapsus* L.) is a biennial herbaceous plant of the figwort family (*Scrophulariaceae*), which is widely distributed in European countries, in particular in Ukraine [2]. The chemical composition is represented by iridoids, saponins, flavonoids, phenylethanoid glycosides (verbascoside) [3]. The common mullein leaves and flowers are used as expectorant, emollient and anti-inflammatory agents [2].

Since mineral elements take part in different metabolic processes in the body and show expressed pharmacological properties [4], we have studied the element composition of common mullein herb which was collected in the flowering phase.

The atom-emission spectrographic method with photographic registration was used for the study of the common mullein herb element composition [1].

Before analysis the crude samples pretreated with diluted sulfuric acid were carbonized in a muffle furnace (temperature max. 500°C). Samples were evaporated from graphite electrode craters in AC arc discharge at 16 A current and 60 sec exposure. Spectra were obtained and registered at DFS-8 spectrograph with diffraction grating of 600 grooves/mm and three-lens slit illumination system. Specter photography terms: AC arc current 16 A, ignition phase 60°C, ignition pulse frequency 100 discharges per second, analytical gap 2 mm; spectrograph slit width 0,015 mm; exposure 60 s. Specters were photographed at 230-330 nm range.

Photo plates were developed, dried, then the following lines (in nm) were photomeasured in spectra of samples and graduated specimens as well as their background. For each element we calculated from photometry results differences in blackening of lines and background ($S=S_{l+b}-S_b$) for spectra of samples (S_e) and of calibration specimens (S_{cs}).

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Then we built the calibration plot in such coordinates: mean value of lines and background blackening difference (S_{cs}) – calibration specimens element content logarithm (lg C), where C is expressed in per cent relative to base.

From this plot we found an element content in ash (a, %). The element content in plant material (x, %) we found by formula: $x = \frac{a \cdot m}{M}$, where m – ash mass, g; M – crude material mass, g; a – element content in ash, %. In analysis we considered the bottom limits of impurities content which were for Cu – $1 \cdot 10^{-4}$; for Co, Cr, Mo, Mn, V – $2 \cdot 10^{-4}$; for Ag, Ga, Ge, Ni, Pb, Sn, Ti – $5 \cdot 10^{-4}$; for Sr, Zn – $1 \cdot 10^{-2}$ %.

As a result of the experiment carried out 19 mineral elements were detected in the common mullein herb. The content of the elements in the common mullein herb (μg/100 g) was: Fe – 23; Si – 535; P – 230; Al – 20; Mn – 6,7; Mg – 235; Pb<0,03; Ni – 0,067; Mo<0,02; Ca – 805; Cu – 1,7; Zn – 33; Na – 335; K – 2010; Sr – 2,0; Co< 0,03; Cd< 0,01; As< 0,01; Hg<0,01. As the obtained results show potassium, sodium, silicon, magnesium and phosphorus have been found in the highest amount in the common mullein herb.

The results obtained can be further used at the new phytoremedies on the basis of common mullein herb working out.

References:

1. Dovgal E, Dababneh MF, Kyslychenko V et al. J Chem Pharm Res, 2016, 8 (9):167-168.
2. Fabad J. Pharm Sci, 2004, 29: 93-107.
3. Tatli II, Akdemir ZŞ, Fabad J. Pharm Sci, 2004, 29: 93-107.
4. Welch RM. Plant and Soil, 2002, 247: 83-90.