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# 47<sup>th</sup> Conference

## SYNTHESIS AND ANALYSIS OF DRUGS



12<sup>th</sup> September – 14<sup>th</sup> September 2018

Faculty of Pharmacy

University of Veterinary and Pharmaceutical Sciences Brno

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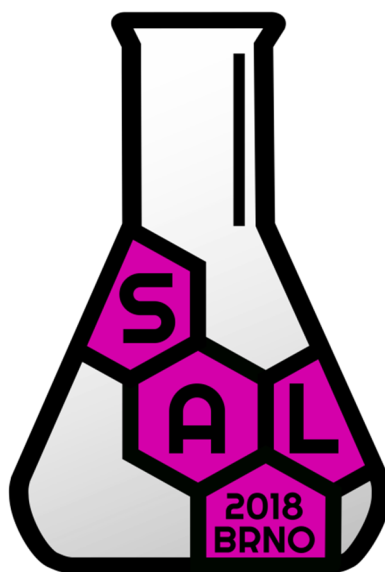
# Book of Abstracts

**SAL 2018 BRNO**

**12<sup>th</sup> September – 14<sup>th</sup> September 2018**

**Brno, Czech Republic**

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Dear colleagues and friends,

it is a pleasure to welcome You all participating in the **47<sup>th</sup> conference Synthesis and Analysis of Drugs (Syntéza a Analýza Léčiv)** here in **Brno** (Czech Republic).

This conference is almost for 50 years traditional Czech-Slovak meeting for sharing current topics and knowledge in the different fields of pharmacy, covering especially synthesis and analysis of drugs, not only for scientists from universities and other scientific institution but also for people from pharma industry and other companies, open and visited also by participants from other european and non-european countries. It is a platform for supporting and promoting cooperation between scientists. Especially young scientists and PhD students with their presentation are always the important part of the participants.

The **47<sup>th</sup> conference Synthesis and Analysis of Drugs** is part of the celebration of the **100<sup>th</sup> anniversary** of the establishment of the **University of Veterinary and Pharmaceutical Sciences Brno**.

We hope that the conference will be nice opportunity to meet your colleagues again and visit Brno.

Best regards,

Assoc. Prof. Radka Opatřilová

*Guarantor of the event*

*SAL 2018 Brno*

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## STUDY OF MACRO- AND MICROELEMENT COMPOSITION OF THE TANACETUM VULGARE SOFT EXTRACT

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The study of the microelement composition of medicinal plants is important for medicine, since the violation of the microelemental equilibrium in the human body plays an essential role in the etiology of many diseases. At present, great attention is paid to complex drugs that contain not only biologically active substances, but also mineral substances [2]. The trace elements not only have a certain physiological effect, but can also show synergy in relation to a number of substances. In addition, the trace elements of plant origin are better digested by the human body, because in plants they are contained in "biological" concentrations. Many medicinal plants are able to accumulate high concentrations of so-called essential elements, which gives them significant advantages in the prevention and treatment of a large number of diseases associated with a violation of the balance of trace elements in the human body [3]. Vegetable raw material is capable of accumulation of chemical elements in the process of vegetation and has the ability to isolate these compounds during extraction and obtaining of complex phytomedicines. It should be noted that some known toxic chemical elements, e.g., arsenic, cadmium, mercury, lead, chromium, vanadium, rubidium, molybdenum, tin and others, in high concentrations exhibit toxic and even poisonous effects on the human body [1].

Minerals play a huge physiological role in the human and animal body. They are part of all cells and determine their structure. They are necessary for the maintenance of processes of respiration, growth, metabolism, blood formation, circulation, activity of the central nervous system, affect the enzymatic processes (they are part of or activate up to three hundred enzymes). A promising sources of medicinal plant material for the production of choleric, hepatoprotective, anti-helminthic and antimicrobial drugs are species of *Asteraceae* family (commonly called "tansy"), which are widely used in Ukraine and contain a complex of biologically active substances, namely: flavonoids, hydroxycinnamic acids, essential oils, bitterness, etc. [3-5]. Thus, **the aim of this work** was to study qualitative composition and quantitative content of macro- and microelements of *Tanacetum vulgare* soft extract in order to establish the possibility and feasibility of creating phytopreparations on its basis.

**Materials and methods of the study.** Soft extract was obtained in laboratory conditions from tansy flowers, collected in the Kharkiv region. Determination of qualitative composition and quantitative content of macro- and microelements was carried out by atomic absorption spectroscopy with atomization in air-acetylene flame on a KAS-120 device based on the Institute for Single Crystals of the National Academy of Sciences of Ukraine.

**Results and discussion.** The presence of the following 19 elements was established: Fe, Si, P, Al, Mn, Mg, Pb, Ni, Mo, Ca, Cu, Zn, Na, K, Sr, Co, Cd, As, Hg. It should be noted that among them a significant amount of potassium is found to be 2290 mg/100 g, calcium - 410 mg/100 g, magnesium - 245 mg/100 g, sodium - 205 mg/100 g, and phosphorus - 100 mg/100 g. The results of elemental analysis showed that the content of heavy metals is within the limits of maximum permissible concentrations, which meets the requirements to the raw materials. Thus, *Tanacetum vulgare* soft extract can be considered as a promising API for further physico-chemical, technological and pharmacological research in order to develop new phytomedicines possessing choleric, hepatoprotective, anthelmintic and antimicrobial activities.

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