

## PP15. OPTIMIZATION OF THE TECHNOLOGY OF A NEW DRUG BASEDON FURANOEREMOPHILAN-14 $\beta$ ,6 $\alpha$ -OLIDE

V.L. UGAI<sup>1\*</sup>, A. AMANZHAN<sup>2</sup>, B.S. ADEKENOV<sup>2</sup>, J. TASTAN<sup>2</sup>, S.M.ADEKENOV<sup>1D</sup>

<sup>1</sup> NJSC "Karaganda University named after academician E.A. Buketov" 100026,  
Republic of Kazakhstan, Karaganda

<sup>2</sup> JSC "International Research and Production Holding "Phytochemistry"100009,  
Republic of Kazakhstan, Karaganda

\*Corresponding Author. E-mail: [info@phyto.kz](mailto:info@phyto.kz)

*Ligularia macrophylla* (Ledeb.) DC is a promising source of biologically active terpenoid compounds, among which the main component is furanoeremophilan-14 $\beta$ ,6 $\alpha$ -olide (**1**), composition C<sub>15</sub>H<sub>18</sub>O<sub>3</sub> with a melting point of 135.7-137.1 °C (petroleum ether:ethyl acetate), [ $\alpha$ ]<sub>D</sub> - 45° (c 0.45, dioxane), contained both in the aboveground and underground parts of the plant [1]. A sample of furanoeremophilan-14 $\beta$ ,6 $\alpha$ -olide (**1**) has anti-inflammatory activity.

The raw materials of the aboveground part (flower baskets, buds, leaves) and the underground part (roots) of *L. macrophylla* (Ledeb.) DC were collected in July 2020 in the vicinity of Nurken village of Karkaraly district of the Karaganda region of the Republic of Kazakhstan.

When optimizing the extraction method of *L. macrophylla* (Ledeb.) DC raw materials, a three-factor matrix of the complete experiment was built, including the following parameters: temperature, extractant concentration and raw material:extractant ratio. A narrow range of factors (parameters) is selected for the accuracy of the formula. The optimization criterion is the yield of the sum of extractive substances and furanoeremophilan-14 $\beta$ ,6 $\alpha$ -olide (**1**). According to the results of extraction of raw materials *L. macrophylla* (Ledeb.) DC the yield of the sum of extractive substances and furanoeremophilan-14 $\beta$ ,6 $\alpha$ -olide (**1**) was determined. In the process of a complete 3-factor experiment, a general formula for optimizing the extraction method of the raw material of the large-leaved *L. macrophylla* (Ledeb.) DC was derived by mathematical analysis. The developed mathematical model of extraction of the raw material of large-leaved *L. macrophylla* (Ledeb.) DC on the basis of a second-order polynomial equation has been verified for convergence with experimental data. The convergence with experimental data has been verified on the basis of a second-order polynomial equation of the large-leaved *L. macrophylla* (Ledeb.) DC. Quality control of raw materials, substances, and the final product is carried out by spectral analysis methods (IR, UV, NMR <sup>1</sup>H, <sup>13</sup>C spectroscopy) and physico-chemical constants according to a standard sample of furanoeremophilan-14 $\beta$ ,6 $\alpha$ -olide (**1**). Thus, the raw material *L. macrophylla* (Ledeb.) DC is of interest as a promising source for the production of an original medicinal product.