**Studying the chemical composition and biological active constituents of the *Ferula foetida***

**Ayaulym Minkayeva**1**, Aydana Kudaybergen**1,2**, Ulpan Amzeyeva**1,2**, Janar Jenis**1,2\*

*1The Research Center for Medicinal Plants, Al-Farabi Kazakh National University, al-Farabi Ave. 71, Almaty 050040, Kazakhstan;*

*2Research Institute for Natural Products & Technology, Almaty 050046, Kazakhstan;*

Corresponding author’s e-mail: janarjenis@kaznu.kz

The nature of Kazakhstan differentiates with its unique and endemic plants that have useful medicinal properties. One of the plants with valuable properties is *Ferula foetida*. It has several pharmacological activities like anti-flatulent, antibacterial, antiviral, antifungal, anti-ulcerogenic, antidiabetic, anti-hepatotoxic properties [1]. Indian researchers investigating anti-helmintic activity led to the result that extract of *Ferula foetida* with the concentration 100 mg/mL showed the highest activity and significantly higher than standard medicines [2].

The research work shows the results of quantitative analysis of aerial and underground parts of *Ferula foetida* that include the compositional substituents and phytoconstituents analysis of the main organic groups. From aerial part of *Ferula foetida* extractive substances – 10,35%, organic acids – 0,155%, polysaccharides – 1,7%, alkaloids – 1,56%, coumarins – 1,96%, saponins – 2,15% were identified. The underground part of *Ferula foetida* showed content of extractive substances – 22,69%, flavonoids – 0,237%, polysaccharides – 2,8%, alkaloids – 1,34% and tannins – 8,5%. Eleven macro and micro elements from the ash of plant were identified by atomic absorption spectrometry method. It showed that underground part ash contains more microelements like Fe (11,826 µg/ml), Mn (2,4748 µg/ml), Cu (0,9230 µg/ml) and macroelements as K (1401,45 µg/ml), Ca (560,640 µg/ml), Na (158,08 µg/ml). Comparatively, ash of the aerial part showed higher concentration of macroelements that includes K (371,350 µg/ml), Ca (590,410 µg/ml), Na (250,675 µg/ml), Mg (209,625 µg/ml) and also microelements such as Fe (3,0438 µg/ml) and Cu (0,7856 µg/ml). The quantitative analysis was conducted according to the methodology of the State Pharmacopoeia of the Kazakhstan Republic. This study of *Ferula foetida* plant are going continued in order to do in-depth research of the chemical composition and biological active substances of both parts of the *Ferula foetida*.

**Keywords:** *Ferula foetida,* phytoconstituents, biological active compounds, quantitative analysis, macro-micro elements

**Acknowledgment**

The Ministry of Education and Science of the Republic of Kazakhstan (AP09259567) supported this work.

**References**

1. Safaeian L., Ghannadi A., Javanmard S.H., Vahidian M.H., 2015. The effect of hydroalcoholic extract of Ferula foetida stems on blood pressure and oxidative stress in dexamethasone-induced hypertensive rats. Research in Pharmaceutical Sciences, 10 (4), 326-334.
2. Gundamaraju R., 2013. Evaluation of anti-helmintic activity of Ferula foetida “Hing- A natural Indian spice” aqueous extract. Asian Pacific Journal of Tropical Disease, 3(3), 189-191.