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## OP-13 INVESTIGATIONS OF NATURAL PRODUCTS FROM MEDICINAL PLANTS OF KAZAKHSTAN

Janar Jenis<sup>1</sup>, Nurshat Kaldybayeva<sup>1</sup>, Haji Akber Aisa<sup>2</sup>

<sup>1</sup> Faculty of Chemistry and Chemical Technology, Al-Farabi Kazakh National University, Almaty, 050038, Al-Farabi ave.71, Kazakhstan

<sup>2</sup> Xinjiang Technical Institute of Physics and Chemistry, Central Asian of Drug Discovery and Development, Chinese Academy of Sciences, Urumchi, 830011, Beijing road 40-1, R. P. China, janarjenis@mail.ru

### INTRODUCTION

Present time, the natural product chemistry will again be of great interest to research scientists and scholars working in the exciting field of new drug discovery. In Kazakhstan, over six thousand kinds of plants in which more than 6000 species of highest vascular plants, about 5000 species of mushrooms, 4851 species of lichen, more than 2000 species of seaweed are registered.<sup>1,2</sup> Meanwhile the plant resources have been efficiently used in the treatments of different kinds of diseases such as bronchitis, bronchial asthma, hepatitis, urethritis, chronic rheumatoid arthritis, nephritis, urolithiasis, pharyngitis, periodontitis, stomach pain, hyperacidity, diarrhea, hemostasia, metrorrhagia, snakebite, and cancer in Kazakh traditional medicine.

### MATERIALS AND METHODS

We focused our attention on study of the bioactive chemical constituents of some Kazakh medicinal plants such as *Dracocephalum nutans*, *Atriplex tatarica*, *Juniperus sabina* and *Bergenia crassifolia* etc. All crude plant extracts were partitioned with n-hexane, chloroform, and n-butanol. Biological activities of the resulting extracts were screened. Then the extracts underwent bioassay-guided fractionation to ultimately isolating the active natural products as well as structures elucidation to discover the novel lead compounds and also to modify or develop the natural products.

### RESULTS AND DISCUSSION

The extracts of medicinal plants showed significant cytotoxic effects on several human cancer cell lines (HL-60, MCF7, and HepG2), together with antimicrobial and vasorelaxation activities. The active principles are responsible for the activity of the plant extracts which were identified as sesquiterpenes, diterpenes, triterpenes, lignans, flavonoids and alkaloids. As the results, six new bioactive diterpenoids have already been isolated from aerial parts of *J. Sabina*, galloylbergenin and phenolic compounds isolated from *B. crassifolia* which showed significant anti-lipid accumulation and vasorelaxant activities also four flavonoids, two triterpenoids isolated from *D. nutans* and their structures were elucidated based by <sup>1</sup>H- and <sup>13</sup>C-NMR spectra together with <sup>1</sup>H-<sup>1</sup>H COSY, HSQC and HMBC spectra.<sup>3,4</sup>

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