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Characterization of anticancer and antiviral properties of natural products in Kazakhstan

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The flora of Kazakhstan represents the rich biodiversity of Middle Asia. This region is continuously exposed to extreme continental temperatures, but the composition and biological properties of plants in this region are largely unexplored. Scientific collaboration of Kazakhstani scientists with leading research centers of the United States significantly expanded our knowledge about the diversity of flora in different regions of Kazakhstan. Kazakhstan has approximately 6,000 species of plants, 677 of which are endemic. The chemical composition of 15% of plants has been studied to some degree, but the remaining has not been explored for their chemical or pharmacological properties. During the last six years of collaborative work with the scientists at the National Cancer Institute, USA, 220 species of plants and 58 plant extracts have been analyzed. Using knowledge-intensive methods for analysis, we discovered that these plants and their extracts possess significant diversity, with 8.5% of them having detectable pharmacological activity. Additional studies continue to reveal secondary metabolites with anti-tumor and/or antiviral activity. In addition, seven individual compounds which have been derived from these natural products, have been isolated and characterized. These are also being screened for anti-tumor and antiviral activity. Thus, the high biodiversity of the flora of Kazakhstan has a great potential in the search for pharmacologically valuable substances. Preservation of these natural resources is critical for maintenance of biodiversity in Middle Asia.

Biography

Khannanov Rinat, graduated from Moscow State University after M. Lomonosov in 2012 with a degree in biochemistry. His interests include but are not limited by molecular biology, biotechnology and organic chemistry. At present time he is a junior scientist at the Branch of the National Center for Biotechnology of the Republic of Kazakhstan and a project manager of the ISTC project K-1282 "Microbiological synthesis of new medicine preparation with tonic, anti-oxidant and anti-tumor activity". ISTC project K-1282 is a joint project with the US National Institute of Health (National Institute of Cancer), Bethesda, MD, USA.

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