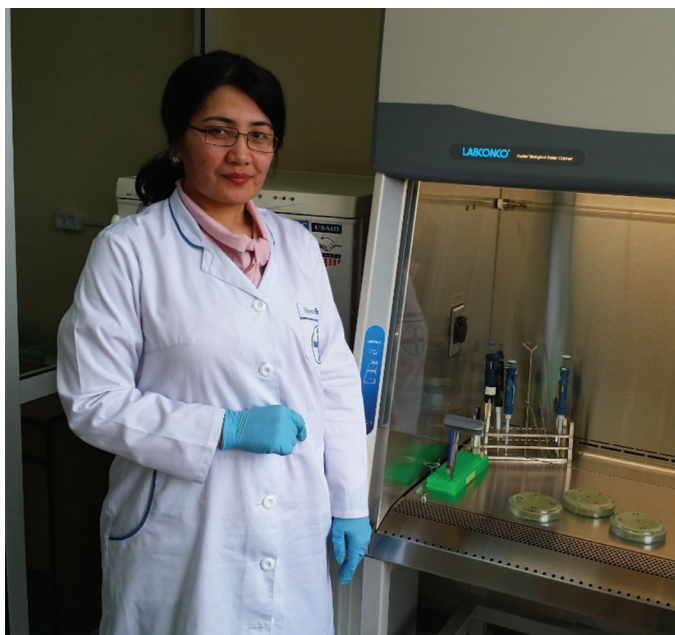


## Profile

# Discovery of Bioactive Compounds from Traditionally used Medicinal Plants: A Profile of Nilufar Z. Mamadalieva



Dr. Nilufar Z. Mamadalieva is working as a Leading scientific researcher at the Laboratory of the Chemistry of Glycosides, Institute of the Chemistry of Plant Substances, Uzbekistan Academy of Sciences. After obtaining her master's degree in chemistry from Fergana State University (Uzbekistan) in 1998, she decided to pursue the doctorate degree in the Institute of the Chemistry of Plant Substances. Nilufar successfully defended her PhD thesis titled “Phytoecdysteroids of *Silene viridiflora*, *Silene wallichiana*, *Silene linicola* and syntheses silenosterone” in 2005 under the supervision of Prof. Z. Saatov. During her activity, she worked over the synthesis and isolation of biological active ecdysteroids. She worked also over the studies of final compounds: defining their chemical structure, synthesis of their derivatives, evaluation of their bioactivity etc.

She has been awarded young scientists' travel grants and participated several International Conferences and Congresses. Dr. Mamadalieva has been involved in several national and international scientific projects. In 2008 she was awarded Tuscia University fellowship and visited the Laboratory of Plant Cytology and Biotechnology. In this Laboratory under the supervision of Prof. Antonio Tiezzi she investigated anticancer activity of natural compounds from Uzbek medicinal plants. Then on 2009 and 2013 she was awarded DAAD research fellowships and

worked in the Laboratory of Pharmacy and Molecular Biology (Heidelberg University, Germany). In that Laboratory under the supervision of Prof. Michael Wink she investigated phytochemical content and anticancer, antimicrobial and antioxidant activities of *Scutellaria*, *Ajuga*, and *Silene* species plants. On 2011 she has been awarded UNESCO-L'ORÉAL Award for Young Women in Life Sciences – recognizing the achievements of young women scientists and during the 2011–2013 she improved her research experience again in Tuscia University, Italy. The subject of her studies was “Herbal plants of the Lamiaceae family used in Uzbek traditional medicine: *in vitro* investigation for testing cytotoxic activities of active principles”. In 2013 Nilufar had research fellowship from Fujii Otsuka Fund for International and Research Exchanges and visited Tokushima University, Japan. Together with Prof. Yoshiki Kashiwada they continued to investigate the chemical content of *Scutellaria* and *Perovskia* species. For her scientific work, Dr. Mamadalieva has received awards and honours, including the OWSD-TWAS-Early Career Women Scientists by Elsevier Foundation (2014) and TWAS Prizes for Young Scientists in Developing Countries (2015). Later she was awarded with Erasmus Mundus PostDoc fellowship (2016–2017) and visited the Laboratory of Prof. Thomas Rosenau as a visiting research fellow (University of Natural Resources and Life Sciences, Vienna, Austria). Her research project was focusing on the chemical investigations of bioactive molecules from herbal plants native to her country. On 2018 she was awarded Alexander von Humboldt Research Fellowship. Currently she is visiting the Department of Bioorganic chemistry (Leibniz Institute of Plant Biochemistry, Halle, Germany) and working with Prof. Ludger Wessjohann. Her research focused on the identification of cognition improving substances from the genus *Astragalus*, suitable as nutritional or even as medicinal component, to improve memory and learning and to avoid negative impacts of dementias such as in Alzheimer's disease. As she believes in the power of collaboration, she has create a pool of networks with leading researchers across the globe, including in the Germany, Austria, Italy, England, France, USA, Egypt, China, South Korea, Turkey and Japan.

Plants are an established source of unique chemical compounds with the potential for industrial development as pharmaceuticals, cosmetics, nutritional supplements, and agrochemicals. Studying of chemical composition and biological properties of medicinal plants has great importance for creating more efficient and available native pharmaceuticals for treatment of various human diseases. Dr. Mamadalieva's scientific interests cover

all aspects of the metabolites in medicinal plants. Her principal research interest is directed toward the isolation and structural elucidation of bioactive natural products from native plant resources using the techniques of isolation and the advanced tools for structural elucidation. Also she has been conducting *in vivo* and *in vitro* biological activity studies on natural compounds. She is looking for the new biologically active natural compounds (ecdysteroids, terpenes, triterpene glucosides, flavonoids, iridoids, etc.) from the plants which are used in Central Asian traditional medicine. She is performing chemotaxonomic investigations of the species from Caryophyllaceae, Lamiaceae, Fabaceae and Apiaceae families. Her current investigations include also metabolomic profiling, structure–activity relationships, and molecular modelling studies of isolated compounds.

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Dr. Mamadalieva is a Member of the Society for Medicinal Plant and Natural Product Research, SILAE (Italo-Latin American Society of Ethnomedicine including Asia and Africa), the International Natural Product Sciences Taskforce (INPST) and Organization for Women in Science for the Developing World (OWSD).

She has published 60 scientific articles (SCI indexed), reviews, five book chapters and edited one book entitled “Phytoecdysteroids” (2013) (Springer).

“I have personal interest to do research and I hope that doing research I can contribute to the development, to the science in my country. For me represents the big interest of research with the purpose of revealing high performance medicinal preparations on the basis natural compounds from the perspective plant sources”.