

## **New Evaluation of the Richness of Cactus (Opuntia) in Active Biomolecules and their Use in Agri-Food, Cosmetic, and Pharmaceutical**

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**Abstract :** Opuntia species are used as local medicinal interventions for chronic diseases and as food sources, mainly because they possess nutritional properties and biological activities. Opuntia ficus-indica (L.) Mill, commonly known as prickly pear or nopal cactus, is the most economically valuable plant in the Cactaceae family worldwide. It is a tropical or subtropical plant native to tropical and subtropical America, which can grow in arid and semi-arid climates. It belongs to the family of angiosperms dicotyledons Cactaceae of which about 1500 species of cacti are known. The Opuntia plant is distributed throughout the world and has great economic potential. There are differences in the phytochemical composition of Opuntia species between wild and domesticated species and within the same species. It is an interesting source of plant bioactive compounds. Bioactive compounds are compounds with nutritional benefits and are generally classified into phenolic and non-phenolic compounds and pigments. Opuntia species are able to grow in almost all climates, for example, arid, temperate, and tropical climates, and their bioactive compound profiles change depending on the species, cultivar, and climatic conditions. Therefore, there is an opportunity for the discovery of new compounds from different Opuntia cultivars. Health benefits of prickly pear are widely demonstrated: There is ample evidence of the health benefits of consuming prickly pear due to its source of nutrients and vitamins and its antioxidant properties due to its content of bioactive compounds. In addition, prickly pear is used in the treatment of hyperglycemia and high cholesterol levels, and its consumption is linked to a lower incidence of coronary heart disease and certain types of cancer. It may be effective in insulin-independent type 2 diabetes mellitus. Opuntia ficus-Indica seed oil has shown potent antioxidant and prophylactic effects. Industrial applications of these bioactive compounds are increasing. In addition to their application in the pharmaceutical industries, bioactive compounds are used in the food industry for the production of nutraceuticals and new food formulations (juices, drinks, jams, sweeteners). In my lecture, I will review in a comprehensive way the phytochemical, nutritional, and bioactive compound composition of the different aerial and underground parts of Opuntia species. The biological activities and applications of Opuntia compounds are also discussed.

**Keywords :** medicinal plants, cactus, Opuntia, actives biomolecules, biological activities

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