



Opuntia spp.: Superfood of the Future and its Biotechnological Potential

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Editors

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DeepScience

Published, marketed, and distributed by:

Deep Science Publishing
USA | UK | India | Turkey
Reg. No. MH-33-0523625
www.deepscienceresearch.com
editor@deepscienceresearch.com
WhatsApp: +91 7977171947

ISBN: 978-93-49307-24-7

E-ISBN: 978-93-49307-30-8

<https://doi.org/10.70593/978-93-49307-30-8>

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Citation: Pérez-Álvarez, S., & Ardisana, E. F. H. (2025). *Opuntia spp.: Superfood of the Future and its Biotechnological Potential*. Deep Science Publishing. <https://doi.org/10.70593/978-93-49307-30-8>

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Preface

Opuntia spp. is a cactus popularly known as nopal in Mexico. Due to its characteristics, it is typically found in arid and semi-arid regions. Currently, 300 species of the genus *Opuntia* are known, approximately 100 of which are present in Mexico, and about 40% of these originate from the Chihuahua Desert.

The *Opuntia* group comprises remarkable plants typically diverse in their environmental growth habits. Creeping and shrub species are forms bristled with branches; a tree is formed when older cladodes change into cylindrical shapes. Most of them have spines, which is quite a cactaceous feature; however, some spineless examples have also been recorded. Mostly, they produce true leaves, but only the young shoots of these plants have such short-lived leaves. A prickly pear is a shrub-like plant, woody in trunk and branches, composed of cladodes. These cladodes are referred to as nopalitos when they are young and succulent, and as pencas when mature.

It is known that in the past, *Opuntia* species were propagated by seeds or vegetatively using rooting offsets or grafting. However, these methods are not useful for propagation on a large scale. For mass production of endangered and economically valuable cacti, in vitro culture techniques such as somatic embryogenesis, and plant regeneration via indirect or direct organogenesis are applied.

Still a major staple food in traditional Mexican cuisine, nopal (*Opuntia* spp.) is generally consumed as a vegetable in salads, while its prickly pear is eaten as a fresh fruit. *Opuntia ficus-indica* is the most widely cultivated species of *Opuntia*. Its fruits typically have a pulpy, sweet flesh with colors ranging from white-grayish and yellow to orange, red, or purple. Depending on the variety, the fruit contains varying amounts of pulp and usually has a thin skin.

Nopal offers an extensive portfolio of products and by-products that promise great benefit to many, especially those who are living in regions experiencing water scarcity.

Dra. Sandra Pérez Álvarez

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