AN OVERVIEW: PHARMACOGNOSTIC, PHYTOCHEMICALS AND PHARMACOLOGICAL PROFILE OF "FIG OPUNTIA FRUIT"

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ABSTRACT
Aim: This review emphasize on the pharmacognostic, phytochemical and pharmacological profile of "Fig opuntia fruit". Method: All the available information on fig opuntia were collected from published articles. Report: According to this article reports related to scientific evidence, Opuntia species is used for various treatment. Crude extract of fig opntia juice are reported to contain (+) -aromadendrin, taxifolin, kaempferol, quercetin, beta-carotene, neoxanthin, beta-cyanin, vitamin-C, E, K, riboflavin, thiamine, betahsitosterol, stigamasterol, opuntisterol, fatty acids, sugars, essential and non essential amino acids, dietary fibers and some minerals, etc. Which are broadly used for therapeutic purpose. Conclusion: This article summarizes that opuntia fruit is pharmacologically active and it is used for treatment of various ailments.

KEYWORDS: Prickly pear, aromadendrin, taxifolin, Opuntia humifusa, anti-diabetic.

INTRODUCTION
Opuntia species is a cactus variety plant. This plant will grown on open regions in sandy rough soil type land and seaside scour properties.[¹] In bright, hot and dry condition. It is fit
for enduring cool winter not at all like numerous desert vegetation, yet severe winter storms are known to cause climate disaster or habitat loss.\textsuperscript{[2]} Widely distributed over East Coast US, Eastern North America, Canada, India especially in Tamil Nadu.\textsuperscript{[3]}

**Common names**\textsuperscript{[4]}
Devils-tongue, Eastern prickly pear, Indian fig.

**Vernacular names**\textsuperscript{[5]}
1. English- prickly pear
2. Hindi - nagphana
3. Tamil-chapati kali
4. Telugu-nagamulla
5. Sanskrit- Snuhi

**Taxonomical features**\textsuperscript{[6]}

**Synonym:** *Opuntia fisus indica*, *Opuntia humifusa*, *O. vulgaris*, *O. compressa*, *O. maxima*, *O. rafinesquil.*

- **Kingdom:** Plantae
- **Clade:** Angiosperm
- **Order:** caryophllale
- **Family:** cactaceae
- **Genus:** Opuntia

**Botanical features**\textsuperscript{[7-9]}
1) Stem : Greeny, low growing perennial cactus.
2) Surface : Barbed bristles, segment, longer spines.
3) Flower : yellowish gold-colour.
4) Fruits : unripe-green and ripped- purplish-red colour, size-3 to 5 cm, shape- globular with minute spines,
5) Seeds : pale colour, 6 to 33 small and flat seeds.
Conventional medicinal uses (Fig opuntia)[10-12]: Eastern prickly pear is long establish used in folk medicine for therapeutic benefits. Pulp of fruits are used to staining syrup or jelly. Peeled leaf are chewed for recover dehydration. It had high nutritional value and main culture uses like cure of diabetes, hypertension, hypolipidemic, ulcer, asthma, rheumatoid pain.

Phyto-constituents profiles[13]
As reports of phytochemicals screening opuntia fruit and other parts of plant have been reviewed from various sources and the chemical components are tabulated below.

Table 1: Phytochemicals of Opuntia species.

<table>
<thead>
<tr>
<th>S. No</th>
<th>Parts</th>
<th>Solvents</th>
<th>Chemical classification</th>
<th>Phyto-constituents</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Fruit</td>
<td>Methanol</td>
<td>Phenolic compound</td>
<td>(+) - Aromadendrin, taxifolin</td>
<td>[14]</td>
</tr>
<tr>
<td>2</td>
<td>Fruit</td>
<td>Ethanol</td>
<td>Phenolic compound</td>
<td>Kaempferol, quercetin</td>
<td>[15]</td>
</tr>
<tr>
<td>3</td>
<td>Fruit</td>
<td>Ethanol</td>
<td>Carotenoids</td>
<td>Beta-carotene, neoxanthin</td>
<td>[16]</td>
</tr>
<tr>
<td>4</td>
<td>Fruit</td>
<td>Water/ethanol</td>
<td>Betalains</td>
<td>Beta-cyanin</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Fruit pulp and cladodes</td>
<td>Ethanol/methanol</td>
<td>Vitamins</td>
<td>Vitamin-C, K, E, Riboflavin, Thiamine</td>
<td>[17][18]</td>
</tr>
<tr>
<td>6</td>
<td>Whole plant</td>
<td>Methanol</td>
<td>Sterols and fatty acids</td>
<td>Beta-sitosterol, stigamasterol, stearic acid, plamiti, oleic, lanolenic acids</td>
<td>[19]</td>
</tr>
<tr>
<td>7</td>
<td>Fruit pulp</td>
<td>-</td>
<td>Sugar</td>
<td>Arabinose, Rhamnose, Xylose, Galactose</td>
<td>[20]</td>
</tr>
<tr>
<td>8</td>
<td>Stem</td>
<td>-</td>
<td>Amino acids</td>
<td>Proline, taurine, carnosine</td>
<td></td>
</tr>
</tbody>
</table>
Fruits/peel - Minerals Ca, Na, K, Fe, phosphorus [21]

Fruits/peel - Opuntia dietary fibers

Pharmacological profile

Table 2: Pharmacological activity of *Opuntia species*.

<table>
<thead>
<tr>
<th>S. No</th>
<th>Activity</th>
<th>Reports</th>
<th>Literature Survey</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Anti-oxidant property</td>
<td><em>Opuntia ficus</em> juice from 1.78 to 4.10micromole TEml⁻¹ by DPD assay and also conducted ABTS assay and FRAP assay. Vitamin-E and phenolic acid as antioxidant agent from opuntia species.</td>
<td>[22][23]</td>
</tr>
<tr>
<td>2</td>
<td>Anti-viral</td>
<td>Opuntia extracts confirmed it anti-viral activity by inhibiting intercellular replication of DNA and RNA viruses. Such as HIV-I, influenza, heroes simple virus.</td>
<td>[24]</td>
</tr>
<tr>
<td>3</td>
<td>Neuroprotective activity</td>
<td>Quercetin, (+) -dihydroquercetin are evaluated as neuroprotective by in-vitro model</td>
<td>[25]</td>
</tr>
<tr>
<td>5</td>
<td>Anti-ulcer properties</td>
<td><em>Maatouï et al (2018)</em> reported the cloades extract of Opuntia is very effective against ethanol induced ulcers</td>
<td>[28]</td>
</tr>
<tr>
<td>6</td>
<td>Anti-inflammatory activity</td>
<td>Beta-sitosterol, from the extract of opuntia is identified as anti-inflammatory action in mice and rat model.</td>
<td>[29]</td>
</tr>
</tbody>
</table>

**CONCLUSION**

This article comprises few available information about pharmacognostic, phytochemicals and pharmacological studies of Opuntia fruit. According to this article report related to scientific evidence, *Opuntia species* is used for various treatments. Crude extract offigopntia juice are reported to contain (+)-aromadendrin, taxifolin, kaempferol, quercetin, beta-carotene, neoxanthin, beta-cyanin, vitamin C, E, K, riboflavin, thiamine, beta sitosterol, stigamasterol, opuntisterol, fatty acids, sugars, essential and non essential amino acids, dietary fibers and some minerals, etc. which are broadly used for therapeutic purposes. This article outlines that opuntia fruit is pharmacologically active like anti-diabetic, anti-inflammatory, anti-ulcer, neuroprotective, anti oxidant, antiviral and it is used for treatment of various ailments.

**CONFLICT OF INTEREST**

The authors declare that NO conflict of interest among us.
REFERENCE


