A Review on Saptrangi (Salacia oblonga Wall): A Medicinal Herb

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ABSTRACT

Salacia oblonga Wall, a native shrub also known as Saptrangi and Ponkoranti, belongs to the family Celastraceae, is distributed across the world.

A large number of chemical constituents such as salacinol, kotalanol, neokotalanol, neosalacinol, and mangiferin are isolated from S. oblonga which show various pharmacological activities. Salacia oblonga Wall is being used in several herbal preparations for treating diabetes and obesity. It possess anti-inflammatory, antihyperlipidemic, antiperoxidative, antimicrobial, antimitogenic, nephroprotective and antimitogenic activities. This review focuses on the potential of Salacia oblonga Wall in various human diseases and can be used as a promising herbal drug, for the benefit of mankind.

Key-words: Salacia oblonga, Salacinol, pharmacological activities, Antidiabetic, Nephroprotective, Patent.

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Introduction

Plants have the ability to synthesize a wide range of phytochemical compounds that possess significant biological functions. Many of these compounds, used to treat various diseases and have beneficial effects on human health. Medicinal plants are rich source of drugs of traditional systems of medicine, pharmaceutical intermediates and chemical existence for synthetic drug. 

Substances derived from plants have recently gained great interest because of its utilization. With increasing interest in the field of herbal medicines, ayurvedic dosage forms and research in the field of herbal formulations, it has become necessary to probe into area of systemic knowledge about herbal drugs. Active components are present in part of the plant like bark, leaves, flowers, roots, fruits, seeds etc. Secondary products from the plants are responsible for its action or biological activity. According to the World Health Organization, large population living in rural areas depends on medicinal herbs, as a primary healthcare system.

Medicinal herbs are commonly available and comparatively economical. Herbal medicine is a great area of research hence it has become necessary to probe into the area of systemic investigation about them.

One of the important medicinal herb from genus Salacia is Salacia oblonga. It is also known as ponkoranti and saptrangi. S. oblonga has long tradition of use from ancient times as an Indian medicinal herb. The genus Salacia (Family: Celastraceae) comprises of various medicinally important species (S. oblonga, S. chinensis, S. reticulata, etc.). Major pharmacological activity of S. oblonga is Anti-diabetic. Presence of various phytochemicals viz, salcinol, kotanol and mangiferin from S. oblonga extracts gives various important biological activities. Salcinol and kotanol have shown antidiabetic activities. Mangiferin is one of the major active component.

Salacia species are well distributed in Sri Lanka, India, China and other Southeast Asian countries, and many plants from this genus (e.g., S. reticulata, S. oblonga, and S. prinoides) have been used for thousands of years in herbal medicine. Apart from its main antidiabetic activity, different species of the genus, Salacia oblonga also exhibited hepatoprotective, antimicrobial, anti-inflammatory, antimalarial, and antiobese activities. It is relatively safe to use and, hence, it is available as an ingredient in many functional area and as a herbal drug.

The review focuses on the potential of Salacia oblonga in various human diseases.

Salacia oblonga Fruit orange (Figure 1), Flower greenish yellow (Figure 2), Root bark golden color (Figure 3)
Vernacular Names
Latin - Salacia oblonga
English- Salacia
Hindi- Saptrangi
Sanskrit-Vairi, pitika
Tamil- Ponkoranti, chundan
Malayalam- Ponkoranti, koranti
Kannada- Ekanayakam
Telugu- Anukudu cettu

Taxonomical classification
Kingdom: Plantae,
Phylum: Magnoliophyta,
Class: Magnoliopsida,
Order: Celastrales,
Family: Celastraceae,
Genus: Salacia,
Species: Salacia oblonga

Plant Profile
These are the plant obtained from the dried roots & leaves of plant Salacia oblonga belongs to the family Celastraceae.

About 407 species are found, some of the species are listed below.
1. S. accedens
2. S. anomala
3. S. cauliflora
4. S. chinensis
5. S. elliptica
6. S. leonardii
7. S. martiana
8. S. oblonga
9. S. tessmannii
10. S. wardii

Plant description
S. oblonga is a strangling shrub with hairless cylindrical branchlets.
Leaves: green in colour, oblong in shape and possess lateral nerves in 7-9 pairs. Leaves are hairless
Flowers: greenish yellow in color, bisexual and arranged in axillary clusters of 3-6 together with small stalks.
Fruits: are drupes and are sub-globose or pear shaped and 5-6 cm in diameter. When ripe, the fruit is orange red in
color with 1-6 angled seeds embedded in a fleshy pulp densely sprinkled with lenticels.
Seeds: large, angular

Distribution
Salacia oblonga are widely distributed in India, Sri Lanka, China, Vietnam, Malaysia, Indonesia and other Asian
countries. In India it is found in the western ghats from Konkan southwards to Kerala. Salacia species are
distributed in tropical and subtropical regions including North Africa, South America and East Asia, particularly in
China.¹

Chemical constituents
The recent studies have shown the presence of many phytochemicals identified from S. oblonga wall. Salacia
species are known to elaborate anthocyanidines, catechins, quinones, friedo-oleanones, quinonemethide and
related triterpenoids. The major bioactive constituents are being xanthine, glucoside, mangiferin and two components with unique thiosugar structure sulfonium sulfate viz., salacinol and kotalanol. Chemical structures of salacinol and kotalanol and Mangiferin are shown in the Figure 2.

![Chemical structures of salacinol and kotalanol and Mangiferin](image)

Table No. 1 Biological activities related to *Salacia Oblonga* plant

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Biological activity</th>
<th>Extract type</th>
<th>Model system</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Anti-mutagenic activity⁷</td>
<td>Hydroalcoholic extract of root bark of <em>Salacia oblonga</em></td>
<td>Wistar rats</td>
<td>Navneet <em>et al.</em>, 2009</td>
</tr>
<tr>
<td>2</td>
<td>Nephroprotective activity⁸</td>
<td>Ethanolic extract of <em>Salacia oblonga</em></td>
<td>250 and 500 mg/kg bw on Acetaminophen induced toxicity in rats</td>
<td>Palani <em>et al.</em>, 2011</td>
</tr>
<tr>
<td>3</td>
<td>Inhibition of Cardiac fibrosis⁹</td>
<td>Aqueous extract of <em>Salacia oblonga</em></td>
<td>Obese Zucker Rat (OZR).</td>
<td>Yu Hao Li <em>et al.</em>, 2004</td>
</tr>
<tr>
<td>4</td>
<td>Hypolipidemic activity¹⁰</td>
<td>Powder extract of <em>Salacia oblonga</em></td>
<td>White Albino Wistar Female Rats</td>
<td>Kalaiarasi <em>et al.</em>, 2011</td>
</tr>
<tr>
<td>5</td>
<td>Anti-microbial Activity¹¹</td>
<td>Root, stem and leaves powdered ethyl acetate extract of <em>Salacia oblonga</em></td>
<td>Gram positive bacteria and gram negative bacteria</td>
<td>Rao MJP <em>et al.</em>, 2010</td>
</tr>
<tr>
<td>6</td>
<td>Antiproliferative activity¹²</td>
<td>Aerial and root extracts of <em>Salacia oblonga</em></td>
<td>Breast cancer cell lines using the MTT assay.</td>
<td>Anjaneyulu Musini <em>et al.</em>, 2015</td>
</tr>
<tr>
<td>7</td>
<td>Anti-inflammatory activity¹³</td>
<td>Root bark powder of <em>Salacia oblonga</em> and leaf</td>
<td>Male Albino Rats using carrageenan-</td>
<td>Ismail <em>et al.</em>, 1997</td>
</tr>
</tbody>
</table>
Adverse reactions
Orally, Salacia can cause gastrointestinal disturbance such as flatulence and distention. Flatulence is more significant with a 1000 mg dose compared to a 500 mg dose. Drinking Salacia tea can cause indigestion and loose stool.23

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Title</th>
<th>Patent No</th>
<th>Inventors</th>
<th>Reference</th>
</tr>
</thead>
</table>

Table No. 2: List of patents based on Salacia oblonga Wall
Compositions for delaying progression of diabetes using Salacia oblonga extract.\(^{25}\)

2. EP 2397039 A1

Cabrera Ricardo Rueda, Martin Manuel Manzano, Pedrosa Jose Maria Lopez

Cabrera R.R., et al., 2011

An organoleptically enhanced salacia plant extract and a process thereof (minora).\(^{26}\)

3. WO 2008136013 A1

Villoo Morawala-Patell, Rajesh Ullanat, Ashok Mundrigi, Jagadeesh Badamaranahalli Henjarappa

Villoo M.P., et al., 2008

Nutritional composition comprising cereal beta-glucan and salacia extract.\(^{27}\)

4. WO 2012024270 A1

Tapas Das, Guarav C. Patel, Shreeram Sathya

Tapas D., et al., 2012

Methods for delaying progression of diabetes using salacia oblonga extract.\(^{28}\)

5. WO 2011163183 A2

Pedrosa Jose Lopez, Martin Manuel Manzano, Cabrera Ricardo Rueda

Pedrosa J.P., 2011

Neutraceutical formulation for treatment of diabetes.\(^{29}\)

6. US 20140186466 A1

Amit Patel

Amit Patel, et al., 2014

Nutritional supplement for the prevention of cardiovascular disease, alzheimer’s disease, diabetes, and regulation and reduction of blood sugar and insulin resistance.\(^{30}\)

7. US 8017147 B2

Mohammad A. Mazed, Sayeeda Mazed

Mohammad A. Mazed. Et al, 2011

Conclusion

The need of *Salacia oblonga* greatly increases in the past few years for its immense therapeutic potentials. *S. oblonga* Wall is an endangered medicinal plant, widely used in Ayurvedic system of medicine to treat diabetes and various other ailments. Increased demand for roots and stems had resulted in extensive clearing of *S. oblonga* Wall from the natural habitats due to which the plant is endangered.

Conflict of interest

We declare that we have no conflict of interest

References


