A Brief Overview on Crinum Latifolium

Shweta Parihar1*, Devender Sharma2,3

1Research Scholar, Department of Pharmacognosy, Maharshi Dayanand University, Near Delhi Bypass, Rohtak, Haryana - 124001, India
2Research Scholar, Department of Pharmaceutics, Lovely Institute of Technology (Pharmacy), Lovely Professional University, Punjab - 144411, India
3Associate Professor, Department of Pharmaceutics, R. J. World College of Pharmacy Education and Technology, Jakhod, Surajgarh, Rajasthan - 333033, India

Abstract: Crinum latifolium is a well-known ornamental species, a well-known home-grown herb in India, that belong to the Amaryllidaceae family. Crinum latifolium is known as "Sudarshana" or Sukhedarshan in Ayurveda. It means that simply gazing at it brings you calm and contentment (Seeing it). The Crinum latifolium roots, stems, flowers and leaves are employed in herbal therapy, and also used as an ornamental plant. Pharmacological and therapeutic research, phytochemistry, Sanskrit synonyms of the Crinum latifolium and its active components are presented in this overview.

Keywords: Crinum latifolium, Amaryllidaceae, Pharmacology, Sanskrit synonyms, ornamental plant, Phytochemistry

1. Introduction

A wide variety of therapeutic plants can be found all over the world. Many weeds in our environment are highly effective medicinal plants that can help with a variety of significant health issues (1). India has long been known as a great store of natural remedies among ancient cultures (2, 3, 25). Crinum is a genus of roughly 180 species that includes a diverse family of lovely perennial plants. They are used for decoration, gardens, and bouquets, and are also known as Spider lily, Trumpet flower, and Swamp lily, among other names. Crinum is a tropical plant that can be found in Asia, Southeast Asia, Australia, and the Pacific Islands, as well as the Caribbean, Florida, and Louisiana. Crinum latifolium is known as "Sudarshana" or Sukhedarshan in Ayurveda. It means that simply gazing at it brings you calm and contentment (Seeing it). Crinum defixum was reported by Sushruta in Ayurvedic literature dating back to 5000 BC (Kandali). This herb is mostly used in Ayurveda for painful swellings, unexplained fevers, poisoning, and skin disorders (4).

Botanical Description

The leaves of a little plant that grows up to 3 feet long and 3 - 4 inches wide have a length of 2 - 4 inches and a breadth of 3 - 4 inches. The large, wide leaves resemble the hood of a snake. It can be found all throughout India. The flowers are stunning, white with a reddish tinge. Flowering stems are long and stout, measuring around 2 - 3 mm in length. Fruits are spherical, 2 - 3 inches in diameter, and contain 8 - 10 seeds (4).

Latin Name - Crinum latifolium
Family - Amaryllidaceae

Habitat

South Asia, Southeast Asia - Caribbean countries, Australia, Fiji, Philippines, Thailand, Singapore Malaysia, Louisiana, Florida and other tropical countries, Brajendranagar, Udaipur, Tripura (5, 14, 6).

Sanskrit Synonyms

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<tr>
<th>S. NO.</th>
<th>Sanskrit Name</th>
<th>Meaning</th>
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<tbody>
<tr>
<td>1</td>
<td>NAGDAMAN</td>
<td>The large, wide leaves resemble the hood of a snake.</td>
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<tr>
<td>2</td>
<td>MEDHI</td>
<td>It helps with memory.</td>
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<td>3</td>
<td>VISHAMANDAL</td>
<td>To get rid of ingested toxin, the leaves juice (10 - 20 ml dosage) can be used as an emetic and purgeative.</td>
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<tr>
<td>4</td>
<td>RAKT PUSHPI</td>
<td>Sudarshana is another English name for Crinum latifolium, which is also known as Pink Striped trumpet lily. Crinurasiaticum blooms in white.</td>
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<tr>
<td>5</td>
<td>RATNAMALA</td>
<td>Because the blooms are lovely and grow in a circular pattern from the umbels</td>
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<tr>
<td>6</td>
<td>VRITT PUSHPA</td>
<td>the flowers grow in a circular pattern.</td>
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<tr>
<td>7</td>
<td>JAMBU</td>
<td>The fruit looks similar to Jambu fruit, also known as Java apple or Jamun. The fruit looks like an onion bulb.</td>
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<tr>
<td>8</td>
<td>KANDALI</td>
<td>Sushruta described Crinum</td>
</tr>
<tr>
<td>9</td>
<td>DUDARSHANA</td>
<td>The fruit gives foul smell</td>
</tr>
<tr>
<td>10</td>
<td>CHAKRAVHA</td>
<td>the flowers grow in a circular pattern.</td>
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<tr>
<td>11</td>
<td>MADHUPARNIKA</td>
<td>Taste of the leaves are sour, bitter</td>
</tr>
<tr>
<td>12</td>
<td>SUDARSHANA, SOMVALLI, MADHUPARNIKA, CHAKRAVHA</td>
<td>Bhavprakash in 17 century gave these names to Crinum (4)</td>
</tr>
</tbody>
</table>
Pharmacological Activities

Antimicrobial activity

The methanolic extract of *Crinum latifolium* plant showed antimicrobial activity through disc diffusion method against gram negative and positive bacteria15, 16.

Anti – inflammatory activity

The methanolic extract of *Crinum latifolium* plant showed Anti - inflammatory activity16.21% & 20.55%10mg/ml for hypotonic solution and heat induced condition 15, 16.

Thrombolytic nature

The thrombolytic nature of the plant was found significant (p < 0.001). The plant showed medium clot lysis, i.e. e.14.64±0.54%, 18.01±0.766%, 21.78±1.039%, 28.43±0.982%, and 33.84±1.749% at 2, 4, 6, 8, and 10 mg/ml concentrations. Crude methanolic extract of *Crinum latifolium*has good thrombolytic activity 17.

Antitumor activity

Extracts of *Crinum latifolium* and alkaloid fraction (expect pure 6 - hydroxyacinamidine) stop the proliferation of lymphoma cells 18.

Anthelmintic activity

Anthelmintic activity was assessed applying five different concentrations of the plant extract and recording the time of paralysis and death 19.

Induced Degranulation of mast cells

The effect of glucan A and phosphatidyllycorine, isolated from *Crinum latifolium* L. (family Amaryllidaceae) was studied on the rate of degranulation of mast cells of albino rats. Different combinations of glucan A and phosphatidyllycorine (5–20 and 5–10 µg/mL, respectively) in vitro, produced statistically significant protection against Tween 80 - induced degranulation, as well as to sensitized mast cells challenged with an antigen (horse serum). The combination (10–20 mg/kg), when administered in vivo, also provided protection against compound 48/80 - induced degranulation of mast cells 20.

Antibacterial and anticancer activity

Biosynthesis of silver nanoparticles (AgNPs) and gold nanoparticles (AuNPs) by using aqueous extract from *C. latifolium* leaf. The actions of four bacterial strains were strongly inhibited by using the CL - AgNPs. The biosynthesized metallic nanoparticles (MNPs) exhibited the excellent catalytic degradation 21.

Inhibit human umbilical endothelial cells formation

4 - senecioylxomethyl - 3, 4 - dimethoxycomarin and 5, 6, 3' - trihydroxy - 7, 8, 4' - trimethoxyflavon were isolated from the methanol extract of Crinum latifolium by bioassay - guided separation. Compound 4 - senecioylxomethyl - 3, 4 - dimethoxycomarin was found to be strongly inhibitory against the in vitro tube - like formation of human umbilical venous endothelial cells (HUVECs) while manifesting no cytotoxicity in tumor cell lines (B16F10, HCT116). Significant inhibitory activity (inhibition percentage, 53.5%) was still observed at concentrations as low as 1 microg/mL. Compound 5, 6, 3' - trihydroxy - 7, 8, 4' - trimethoxyflavone showed a modest inhibitory effect on the tube - like formation of HUVECs 22.
Anticancer activity

Four novel and potently bioactive Amaryllidaceae alkaloids, 4, 8 - dimethoxy - crispowellin C (1), 4, 8 - dimethoxy - crispowellin D (2), 9 - methoxy - crispowellin B (3), and 4 - methoxy - 8 - hydroxy - crispowellin B (4), together with one known alkaloid, crispowellin C (5) were isolated from the 95% EtOH extract of the bulbs of Crinum latifolium. These alkaloids 1 - 5 exhibited potent cytotoxicity against all of seven tested tumor cell lines with (IC₅₀ < 30 nM) 23.

Antimicrobial activity

Alkaloids 9 - methoxy - crispowellin B, and 4 - methoxy - 8 - hydroxy - crispowellin B displayed the significant antimicrobial activity with IC₅₀ values <0.50 mM 23.

Antioxidant activity

Alkaloids 9 - methoxy - crispowellin B, and 4 - methoxy - 8 - hydroxy - crispowellin B displayed antioxidant activity in the ABTS⁺ and DPPH test. Additionally, Alkaloids 1 - 5 exhibited comparable inhibition of Cox - 1 (>64%) and Cox - 2 (>90%) with positive control 23.

2. Conclusions

Numerous investigations on various components of Crinum latifolium have been undertaken, and this plant has been produced as a medication by pharmaceutical companies. Identification, categorization, and recording of plants required a through and methodical investigation, which could be a useful strategy to promote traditional knowledge of the therapeutic herbal plant.

References


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