**ABSTRACT**

Medicinal plants are of great use in sustaining human health. The plant *Pavonia odorata* commonly called as fragrant swamp mallow, sugandhabala belonging to family Malvaceae is used traditionally for the treatment of haemorrhage, inflammation, fever, urinary disorders etc in traditional and alternative systems of medicine. The plant was known to contain sesquiterpene alcohol panone. The review article describes various pharmacological studies conducted on the plant species. Apart from that, molecular docking studies performed, and studies carried out in Ayurveda and Siddha systems of medicine on this plant species are also discussed in the manuscript. The study indicates that the plant has undergone fewer phytochemical studies, needs to be explored further.

**Keywords:** *Pavonia odorata*, phytochemistry, pharmacology.

**INTRODUCTION**

Medicinal plants are one of the rich resource of medicaments useful as templates in drug design and development. They are part of traditional cultures in various parts of the world. In order to prevent biopiracy many countries started documenting ethnomedicinal or ethno medicinal information of their traditional resources.¹²

*Pavonia odorata*, or Sugandhabala, is one of the valuable medicinal plant species belonging to the family Malvaceae. The plant is known in various languages as fragrant swamp mallow (English), Sugandhabala, (Hindi), Hribera (Sanskrit), and Chittibenda (Telugu). It is distributed in tropical part of Indian subcontinent, Africa, Sri Lanka, Pakistan and yanmar³. The shoots and roots of this plant are exceptionally aromatic. The photograph of the plant is given in figure 1. The microscopical diagnostic features include cortex with more starch grains, druses and few raphides. The pericyclic part consists of discontinuous arrangement of sclerenchymatous cells.⁴

**Ethnomedicinal & Alternative Systems of Medicine Usage**

The plant is used traditionally in the treatment of various chronic diseases like diabetes in Siddha⁵ and Ayurvedic system of medicine.⁶ It was referred to as analgesic and antipyretic herb in Siddha system of medicine.⁷ The plant extract acts as cooling, carminative, demulcent, diaphoretic, and anti-pyretic agent⁸. It is used in dysentery, ulcers and bleeding disorder. The roots are generally used in stomachache, as astringent, and demulcent.⁹ The aqueous extract of the plant is used in mineralization and demineralization reaction of ayurvedic formulatin.¹⁰ The plant is often adulterated with bala plants.¹¹ It is one of the ingredients of Vasakadyarist.¹²

**Phytochemistry**

GC-MS analysis of volatile oil of the plant showed the presence of major phytochemicals such as a-eudesmol, b-caryophyllene oxide, ageratocromene, hexahydrofarnesyl acetone, and palmitic acid.¹³ Palmitic acid, capric acid, hexahydrofarnesyl acetone, alphaterpine, alpha-pinene, alpha-eudesmol etc. The most

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**Figure 1:** *Pavonia odorata* plant  
(https://ayurwiki.org/Ayurwiki/Pavonia_odorata_Baalaka_Sugandha_bala)
aromatic compounds were 3-butylypyridine, 2-nonanone, a-caryophyllene oxide and (E)-pinocarveol. Earlier a- 
apinen, a-terpinene, aromadendrene, azulene, caproic 
acid, isovaleric acid, isovaleraldehyde, methyl heptenone, 
pavonene, pavoneol and palmitic acid were studied from 
roots.12,13

PHARMACOLOGICAL ACTIVITY STUDIES

Acute toxicity study:
It has been found out that methanol extract was non-
poisonous and safe up to 2000 mg/kg.14

Urinary calculogenesis: Aqueous extract of whole plan 
inhibited calcium and phosphate ions deposition.9,15

Antimicrobial activity:

Antibacterial activity: The essential oil of leaf showed 
antibiotic activity against Staphylococcus aureus, 
Diplococcus pneumoniae.16 The rhizomes of the plant were 
extracted for essential oil using hydro-distillation 
technique and tested against 13 fungi and 10 bacteria 
employing paper disc agar diffusion method for their 
antibacterial and antifungal response. The oil 
concentration of 0.55 inhibited the growth of Diplococcus 
pneumoniae, Escherichia coli, Klebsiella sp., Staphylococcus 
aureus. The root extracts showed antimicrobial activity 
against five tested organisms namely, Aspergillus niger, 
Aspergillus flavus and Candida albicans.17

Antifungal activity:
The growth of keratinophilic fungi Trichophyton 
mentagrophytes and Chrysosporium indicum along with 
Aspergillus sp., Botrydiplodia sp. Fusarium solani was also 
found to be inhibited by the oil.18 The root extracts showed 
antimicrobial activity against organisms namely, 
Aspergillus niger, Aspergillus flavus and Candida albicans17

Anti-oxidant activity
The antioxidant activity of the P. odorata volatile oil was 
examined by through oxygen radical absorbance capacity 
(ORAC) assay7.

Antitumour activity
Methanol extract of the plant hydroalcoholic, and ethyl 
acetate fractions were evaluated for their cytotoxic 
effects19. The effectiveness of methanol extract with 
respect to clonogenic inhibition on human breast cancer 
(MDMB-231), lung cancer (Calu-6) and Prostate cancer (PC-3) 
was examined14

Anti-inflammatory Activity
Carrageen induced hind paw edema method was used to 
study the anti-inflammatory activity20, 17.

Antidiabetic Activity
Tribal people in tropical and subtropical areas have been 
employing P. odorata extracts to treat diabetes. The plant 
root methanolic, chloroform, and ethylacetate extracts 
were studied by alloxan induced diabetic model in rats. The 
results proved that plant extracts exhibited antidiabetic 
activity21.

Anthelmintic Activity
The aqueous and alcoholic extracts, were tested according 
to dose, times of paralysis and death were recorded. The 
alcoholic extracts gave significant and more potent results 
than the aqueous extract when compared to standard22.

MOLECULAR DOCKING STUDIES

Anthelmintic activity
Molecular docking studies were carried out against alcohol 
dermatophytosis and was found that the compounds were 
able to bind to target proteins24.

Athletes’ foot disease
Molecular docking-based screening of a few phytochemicals 
revealed that the phytochemicals effectively associate with the active site of the protein 
against Epidermophyton floccosum and hence bears 
diagnostic and therapeutic potentials against athletes’ foot 
disease.25

CONCLUSION
For centuries, extracts of plants have found use in 
traditional medicine across different regions of the world. The plant P. odorata possesses varied pharmacological 
activities and many bioactive compounds. Many of the 
phytochemicals were not yet isolated, quantified and 
studied for the pharmacological activities. Hence, further 
studies are required to explore the plant extensively for its 
phytochemical and pharmacological revealing.

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