Review on Stereospermum suaveolens DC: A Potential Herb

A K Meena1, A K Yadav2, P. Panda1, Komal Preet1 and M.M Rao1

1National Institute of Ayurvedic Pharmaceutical Research, CCRAS, Dept. of AYUSH, Patiala -147001, (India).
2School of pharmaceutical sciences, Shobhit University, Meerut, Uttar Pradesh.

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ABSTRACT

Plants have been an exemplary source of medicine. Ayurveda and other Indian literature mention the use of plants in treatment of various human ailments. India has about 45,000 plant species and among them, several thousands have been claimed to possess medicinal properties. Research conducted in last few decades on plants mentioned in ancient literature or used traditionally for diseases. Stereospermum suaveolens are known for their antimicrobial, antiprotozoal, and anti-inflammatory, puerperal fevers and affections of the brain. The present paper deals with the Phytochemistry and Pharmacological action of the plant Stereospermum suaveolens.

Keywords: Stereospermum suaveolens, Ayurveda, diseases, Antioxidant Activities, Hepatoprotective activity.

INTRODUCTION

Stereospermum suaveolens DC. Bengali name- Atkapali, Paruli gachh; Family-Bignoniaceae) is a large deciduous with grayish or dark brown bark. Leaves imparipinate, Leaflet elliptic. Flowers purpleish-yellow, fragrant, in large, lax panicles, capsules straight, cylindric, grayish with white dots.

Stereospermum suaveolens is a medicinal tree species native to India, Bangladesh and Myanmar. The Bignoniaceae having about 100 genera with 800 species, are known for their antimicrobial, antiprotozoal, and anti-inflammatory properties. Both the timber and the root heartwood of Stereospermum suaveolens were found to contain lapachol, elicitor of contact dermatitis. Moreover, barks, flowers, roots and leaves of Stereospermum suaveolens are used by traditional healers, rural communities and pharmaceutical companies for remedies of diseases like heating, vomiting, eructation, piles, acidity, diarrhoea, gonorrhoea, loss of taste, malaria and other fevers.

Stereospermum suaveolens distributed in the subhimalayan tract and outer hills, central India, western Peninsula, Burma, Bangladesh and the English Forest. It is reputed for its antipyretic property and is also useful in excessive thirst, cough and asthma. Lapacho, dinatin, dinatin-7-glucuronide and á-sitosterol have previously been reported from this plant. Studies with S. suaveolens provided a new anthraquinone, stereochenesol and a new naphthoquinone, stereochenesol along with a new anthraquinone, stereochenesol, previously known from S. kunthianum and S. personatum.

Stereospermum suaveolens root bark is an ingredient of Dasmula.

Decoction of roots used in intermittent, puerperal fevers and affections of the brain. Stem bark diuretic and tonic. Flowers given by honey to stop cough.

PHYTOCHEMISTRY


PHARMACOLOGICAL ACTION

Antihyperglycemic and Antioxidant Activities

The ethanol extract of Stereospermum suaveolens bark was evaluated for its antihyperglycemic in addition to antioxidant effects in streptozotocin (STZ)-induced diabetic rats by acute and subacute models at dose levels of 200 and 400 mg/kg body weight, given orally. The ethanol extract showed a significant reduction in fasting blood glucose levels when compared to the standard drug, oral Glibenclamide (0.5 mg/kg body weight). The serum of rats treated with ethanol extract showed decreased levels of serum glutamate oxaloacetate transaminase, serum glutamate pyruvate transaminase, serum alkaline phosphatase, bilirubin, creatinine, urea, total cholesterol, triglycerides, and increased level of total proteins. EESS showed reduction in thiobarbituric acid reactive substances level and significantly increased the body weight (P < .001), glycogen, reduced glutathione, superoxide dismutase, and catalase activities, compared with STZ diabetic control in a dose-dependent manner. This finding shows that the ethanol extract of Stereospermum suaveolens exhibits potent antihyperglycemic and antioxidant properties.
Anti-inflammatory effect

The anti-inflammatory effect of the ethanol extract of *Stereospermum suaveolens* (Roxb.) DC bark given orally at the dose of 200 and 400mg/kg body weight was studied in rats using the carrageenan-, dextran-, and histamine-induced hind paw edema, and cotton pellet-induced granuloma formation models. Indomethacin at the dose of 10mg/kg body weight was used as a standard drug. The extract (400mg/kg body weight per os) showed maximum inhibition of edema 64.6, 53.48, and 50.06% at the end of 3h with carrageenan-, dextran-, and histamine-induced rat paw edema, respectively. The extract (400mg/kg) exhibited significant reduction (34.77%) in granuloma weight in the cotton pellet-induced granuloma model. From these results it could be concluded that, the ethanol extract of *Stereospermum suaveolens* possesses maximum anti-inflammatory activity in a dose-dependent manner, in various experimental models. \(^{(1)}\)

Hepatoprotective activity

Hepatoprotective activity is studied by carbon tetrachloride (CCL\(_4\))-induced liver damage in albino rats. The degree of protection in this activity has been measured by using biochemical parameters such as serum glutamate oxaloacetate transaminase (SGOT), serum glutamate pyruvate transaminase (SGPT), alkaline phosphatase (ALP), total bilirubin, LDL-cholesterol and SOD, CAT, GSH, total thiols, NO, and lipid peroxidation. The extract significantly (p <0.001) increased levels of SOD, CAT, GSH and total thiols, as compared to control group. Histopathological studies further substantiate the protective effect of the extract. It was concluded that methanol stem bark extract of *Stereospermum suaveolens* showed effective hepatoprotective activity. \(^{(1)}\)

Anticancer activity

Lapachol [2-hydroxy-3-(3-methyl-2-butenyl)-1,4-naphthoquinone] is a vitamin K antagonist with antitumor activity. The effect of lapachol on the experimental metastasis of murine B16BL6 melanoma cells was examined. A single oral administration of a high toxic dose of lapachol (80–100 mg/kg) 6 h before iv injection of tumor cells drastically promoted metastasis. This promotion of metastasis was also observed in T-cell-deficient mice and NK-suppressed mice. In vitro treatment of B16BL6 cells with lapachol promoted metastasis only slightly, indicating that lapachol promotes metastasis primarily by affecting host factors other than T cells and NK cells. A single oral administration of warfarin, the most commonly used vitamin K antagonist, 6 h before iv injection of tumor cells also drastically promoted the metastasis of B16BL6 cells. The promotion of metastasis by lapachol and warfarin was almost completely suppressed by preadministration of vitamin K3, indicating that the promotion of metastasis by lapachol was derived from vitamin K antagonism. Six hours after oral administration of lapachol or warfarin, the protein C level was reduced maximally, without elongation of prothrombin time. These observations suggest that a high toxic dose of lapachol promotes metastasis by inducing a hypercoagulable state as a result of vitamin K-dependent pathway inhibition. On the other hand, serial oral administration of low non-toxic doses of lapachol (5–20 mg/kg) weakly but significantly suppressed metastasis by an unknown mechanism, suggesting the possible use of lapachol as an anti-metastatic agent. \(^{(1)}\)

CONCLUSION

The above collected information regarding the use of *Stereospermum suaveolens* in world is matched with available literature. Furthermore, the uses of this plant which is not known by the human should be widely disseminated in the world under study so that they can exploit its uses for their well being in daily life.

REFERENCE

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