A Review on Pharmacognosy and Pharmacological Properties of Scleria lithosperma (L.) Sw

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Abstract: Scleria lithosperma L. belonging to the family Cyperaceae is a perennial plant that thrives near streams, tanks, hill slopes, lush pine rock terrain, and rocky locations. Both the Tirumala and Chittoor Districts of Andhra Pradesh in India, as well as numerous other geographical places, are home to it. The description of various plant sections and information on the phytoconstituents of the plant are covered in the current review. The plant's several pharmacological actions are explored.

Keywords: Scleria lithosperma, Cyperaceae, Phyto-constituents, Pharmacological activities

INTRODUCTION

Scleria lithosperma L. Sw belonging to the family Cyperaceae is a Perennial plant with short, nodulose, and fresh scented rhizomes. Slender, 30-90 cm long, glabrous or somewhat scabrous, tuft-like culms [1]. The perennial clumping herb *Scleria lithosperma* reaches a height of 40 centimetres (typically 15-20 centimeters). Steroids, saponins, and glycosides are the primary ingredients. The extract has historically been used to treat skin conditions, as an abortifacient, and to normalize menstrual cycles [2]. The plant *Scleria lithosperma* effectively produces antinephritic activity. Root decoction is administered upon delivery. Young tops are given to kids to help with their bloated stomachs. In the same way the other species of Scleria such as Scleria biflora Roxb. roots emit a potent camphor or cajeput odour. S. levis fruit is used to treat stomach and cough issues. Cough is treated with a decoction of S. pergracilis (Nees) Kunth sedge, which grows in the Himalayas at elevations of 1,500 m from Garhwal to Assam as well as in Bihar, West Bengal, and the Deccan Penninsula [3, 4].

Common Names: The plant is commonly known as Florida Keys Nutrush, Slender nutrush, Scirpus lithosperma in English, Kathipul in Tamil, Kondashaka thunga in Telugu and Nakkupullu in Malayalam.

Habitat of *Scleria lithosperma*: A perennial plant called *Scleria lithosperma* is commonly seen growing along streams, tanks, hill slopes, rocky places, and under the growth of forested areas, as well as in shady pathways, fertile pine rockland, and hammock growth.

Geographical Distribution: The plant is indigenous to the following countries: Andaman Islands, Angola, Assam, Bahamas, Bangladesh, Benin, Bolivia, Borneo, Brazil West-Central, Burkina Faso, Cambodia, Caroline Islands, Cayman Islands, China South-Central, China Southeast, Comoros, Costa Rica, Cuba, Dominican Republic, East Himalaya, Ethiopia, Fiji, Florida, French Guiana, Ghana, Guatemala, Hainan, Haiti, Honduras, India, Ivory Leeward Is., Lesser Sunda Is., Louisiana, Madagascar, Malaya, Maluku, Marianas, Mexico Gulf, Mexico Northeast, Mexico Southeast, Mexico Southwest, Nigeria, Northern Territory, Panamá, Philippines, Puerto Rico, Queensland, Samoa, Sri Lanka, Sulawesi, Sumatera, Taiwan, Tanzania, Thailand, Togo, Tonga, Trinidad-Tobago, Turks-Caicos Is., Vietnam and Wallis-F. It is mostly present in India's Japalitheertham, microwave station, and papanasanam highlands of Tirumala, Kailasakona, and Kambakkam. The majority of the year is spent growing it [5].

Taxonomic classification of *scleria lithosperma l(sw)*

Kingdom: Plantae
Sub-Kingdom: Viridiplantae
Infra-Kingdom: Streptophyta
Super Division: Embryophyta
Division: Tracheophyta
Sub-Division: Spermatophytina
Class: Magnoliopsida
Super Order: Lilianae
Order: Poales
Family: Cyperaceae
Genus: Scleria
Species: Lithosperma L. Sw

Figure 1: ***Scleria lithospeerma (L) Sw.***

DESCRIPTION:

Plants: An aromatic perennial herb with an upright tufted growth habit and short.

Rhizomes: Horizontal nodulose rhizomes.

Stems: Slender, 30-90(-115) cm, glabrous or somewhat scabrous, tuft-like culms.

Leaves: Sheaths are purple, and the leaves are grouped together near the centre of the stem. The leaves are wingless, weakly ribbed, hairy, finely pilose, or nearly glabrous; the contra-ligules are reddish, triangular, rigid, and clearly ciliate; the blades are a distinct greyish green when dry, linear, attenuate, and keeled, and they are 1-3(-5) mm wide and shorter than [6].

Inflorescence: Axillary 1-3, terminal 1, rather slack; stalked panicles or spikes 2-4, terminal one 3-4.5(-8.5) cm with 2-7 open fascicles. With 1-4 spikelets that are 2-6(-9) mm diameter, the bracts that subtend and cover the inflorescence are leaf-like, widely attenuate, and scabrous. Few, 3- to 5-mm bisexual spikelets with an occasional terminal staminate spikelet have lance-shaped staminate scales and ovate-acuminate pistillate scales with a distinct green keel. Achenes are ovoid or globose, 2-2.5(-3) mm, smooth, base broadly attenuate, moderately depressed between angles, trigonous, not porose, and have an umbonate apex. The hypogynium is no longer present and has been reduced to a recognisable brown band at the base of the achene.

Spikelets: Spikelets are monoecious, 1/6 inch long, pale brown with green markings, and can be found in small clusters or alone.

Nuts: White, smooth, and between 1/16 and 1/12 inches long; obovoid or ellipsoid; little hypogynous disc [7, 8].

PHYTO-CONSTITUENTS: While the aqueous extract only yielded a positive result for the presence of saponin glycoside, the methanolic, ethanolic, and chloroform extracts revealed the presence of glycosides, flavanoids, saponins, and steroids. Additionally, it was discovered that methanol produced the highest yield in terms of percentage, so methanolic extract from the plant *Scleria lithosperma* L. was employed for further research [6].

Composition of Essential oil obtained by Hydrodistillation of Rhizomes: A light yellow volatile oil is obtained from the Rhizomes *of Scleia lithosperma* by hydrodistillation method. Totally 22 constituents comprising 96.5 % were reported to be present in the oil. The major constituents reported are fatty acids (76.1%), palmitic acid (43.3%), linoleic acid (14.0%) and oleic acid (7.8%) [9].

TRADITIONAL USES: The problem is resolved by using vakkathipullu, a sebacious cyst on the *Scleria lithosperma* tuber that is cleansed, fried, and pulverised before being blended with coconut oil and applied to the infection. It has also been utilised historically to control menstrual periods. both during pregnancy and as a form of birth control. It helps to treat children with large stomachs and uses an antibacterial as well. Herbs or plants of the same family include Cyperaceae, which have anti-diabetic, hypolipidemic, and antioxidant properties [6].

PHARMACOLOGICAL ACTIVITIES:

Cardio-protective activity: For the first time, the current study examines the cardioprotective potential of the whole plant extract from *Scleria lithosperma* against doxorubicin-induced cardiotoxicity. Indian folklore medicine views *Scleria lithosperma*, a herb from the Cyperaceae family, as a treatment for cardiac conditions. Doxorubicin is still a popular and efficient broad-spectrum chemotherapeutic drug. However, due to its severe dose-dependent cardiotoxicity, its clinical use is restricted. Increased oxidative stress may be a major factor in cardiomyopathy and heart failure that follow DOX treatment, according to clinical and experimental findings.

Glycosides, tannins, phenolics, saponins, alkaloids, and flavonoids were found in EEWSL after a phytochemical analysis, and these compounds are what give the plant its powerful antioxidant properties. Natural remedies with antioxidant and free radical-scavenging properties may be preventive against cardiovascular disease and offer effective substitutes. By preserving the integrity of the myocardial cell membrane, pretreatment with EEWSL dramatically reduced the blood levels of

diagnostic marker enzymes in myocardial infarction produced by DOX. This may be because the plant's flavonoids and other antioxidative phytochemicals have the ability to scavenge free radicals [10].

Hypo-lipidemic activity: Rat models of hyperlipidemia brought on by high-fat diets were used to study the hypolipidemic efficacy of *Scleria lithosperma* extract. Rats with hyperlipidemic conditions had higher cholesterol, triglycerides, LDL, and VLDL levels. By reducing the levels of certain biochemical markers in the serum, such as cholesterol, TG, LDL, and VLDL, and increasing HDL levels—which were comparable to those of the conventional medicine orlistat—methanolic extract had a hypolipidemic impact. Steroids, flavanoids, saponins, and glycosides were among the phytoconstituents that were found, according to preliminary phytochemical investigation [11].

Anti-microbial activity: The preliminary phytochemical analysis and antimicrobial activity of ethnomedicinal plant *Scleria lithosperma* was studied. The plant was collected from the tribal belt of the Kanyakumari district in Tamil Nadu. The results of the antibacterial tests showed that the studied plant had better inhibitory activity with Staphylococcus aureus when methanolic extract was used [12].

CONCLUSION:

Scleria lithosperma L. is a perennial plant that grows near streams, tanks, hill slopes, fertile pine rock terrain, rocky places and belongs to the family Cyperaceae. It can be found in India in the Tirumala and Chittoor Districts of Andhra Pradesh and also distributed in many other geographical areas. The present review is done on different plant parts description and about the Phyto-constituents of the plant. The variety of pharmacological activities of the plant are discussed.

ACKNOWLEDGEMENT:

The author's convey heartfelt thanks to the Principal and Management, Raghavendra Institute of Pharmaceutical Education and Research (RIPER) for their support and encouragement to carry out the work.

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