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Review article

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A review on ethanobotanical uses and pharmacology of *plecospermum spinosum*

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ABSTRACT

The association of humans and animals with plants obviously originated with the beginning of life on earth, when plants supplied much of the shelter, oxygen, food and medicine needed by higher life forms. Overtime and with the beginning of societies, human learned to recognize and categorize plant materials suited for use in meeting the necessities of life. The use of herbs and herbal extracts for their healing powers can be traced to earliest of myths, traditions and writings used to codify those plants that can ease pain and treat diseases. India, being the treasure-house of biodiversity with its diverse ecological conditions, rich ethnic diversity and a strong traditional knowledge base, accounts for 45,000 plant species, out of which more than 8,000 species are used in some 10,000 herbal drug formulations. As per the WHO, 80% population in developing countries relies on traditional natural medicines, and almost 80% of the traditional medicines involve the use of plant extracts. *Plecosperrum Spinosum* Trec., is one of the traditional plant grown in India as it have several phytoconstituents and pharmacological activities it is used as medicinal plant for treating disease like myocardial infarction, diabetes, cancer, cholera, cold, jaundice and tooth ache etc. Ethnobotanical survey has also reported that this plant is used for general uses. This review discusses the investigation made by various workers related to its medicinal uses, chemical constituents, and its pharmacological activities.

Keywords: Traditional medicines, *Plecosperrum Spinosum* Trec, Uses.

INTRODUCTION

Plecosperrum Spinosum is commonly called as "Paper cup flower". It is one of the traditional plants grown in India as it has several phytoconstituents and pharmacological activities. The type of the plant is evergreen and the bark thickness is maximum for the thorny straggler and sap quantity is moderate. The texture is rough and sap colour is milky. Fauna of this plant is spiders which show a strong positive

relationship with sap producing plant species and an opposite trend with sap-lacking species. There is also a positive relationship with rough- surfaced bark for accommodating spider fauna [1].

Botanical name: *Plecosperrum Spinosum* Trecul

Synonym: *Maclura Spinosa* & *Tropis Spinosa*

Family: Moraceae

Vernacular names [2-4]

Vernacular name	: Palkattanji
Common Name	: Ekkimullu, Bana Banika Gumbenfong
Local Name	: Katuthimbol, Achingudi
Tamil Name	: Korrataimul
Malayalam Name	: Venninkodi
Karnataka Name	: Bendaka
Orissa Name	: Banabana

Telgu Name : Koriti, Kodiari

Taxonomy [5]

Kingdom	: Plantae
Phylum	: Tracheophyta
Class	: Magnoliopsida
Family	: Moraceae
Genus	: Plecospermum
Species	: Spinosum



Fig No : 1



Fig No : 2

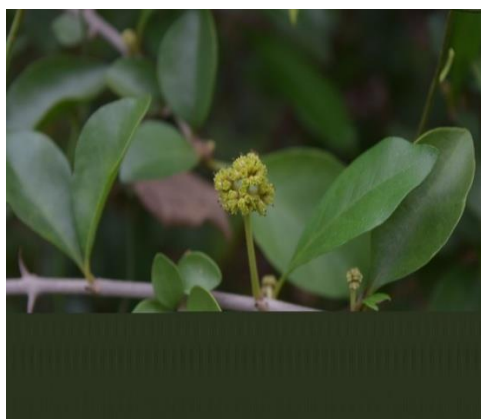


Fig No : 3



Fig No : 4



Fig No : 5



Fig No : 6

CULTIVATION AND COLLECTION [6]

For cultivation of this plant it should be planted in full sun or half shade. As it grows in a wide variety of situations and soils, but the soils need to be free of draining. The species is propagated by seeds. For germinating process the seeds should be soaked in water for 24 hours. It is collected in dry evergreen forest from the coastal plains up to 1300m. This plant is dioecious plant. The plant of this species has unisexual flowers on separate plants (either only male (or) only female flowers). No individual plant produces both pollen & ovules. Through wide variety of insects the plant is pollinated and the seeds are dispersed by fruit eating birds and mammals.

Description

Habit

The habit of the plant is either in the mature stands reaching up into canopy or in more distributed areas straggling over other plants. It is fast growing, good for fencing and nice foliage [7]. (Fig no: 1)

Leaves

Scandent shrub with long spines leaves elliptic or obovate, obtuse or shortly acuminate, cuneate to 95×45 cm, Subcoriaceous, glabrous, Inflorescence pubescent. The leaves are arranged alternately and length is 6-10 cm and width is 3-4 cm. Leaves started falling during green foliage. (Fig no: 2)

Flowers

Staminate and pistillate flowers sessile, aggregated in groups of 13, axillary, pedunculate, capitates clusters; peduncle to 1 cm. Staminate: bract basal; bracteoles intermixed with flowers. Tepals 4, ovatelanceolate. Stamens 4, inflexed in bud; anthers reflexed later, Pistillode minute, hairy. Pistillate: Tepals 4 toothed, connate into a fleshy head. Flowering season of this plant is from March to June. (Fig no: 3)

Fruit

The type of the fruit is berry, and the colour of the fruit is yellow. Ovary sunken; Style simple. Syncarps irregularly shaped, more or less angled, to 1 cm wide, enclosing a few anthocarps, with achenes immersed. Fruiting season of this plant is from July to September [8]. (Fig no: 4)

Seed

The seed of *Plecosperrum Spinosum* is ellipsoid or reniform, light brown-colored and hairy. The seed are about 6-8 mm long and 5-6 mm wide. (Fig no: 5)

Bark

Bark is thin, orange coloured with long and stout thorns. Latex is milky. It is straggler, evergreen, rough bark and thorny are straight [7, 8]. (Fig no: 6)

Distribution [9-11]

The Distribution of *Plecosperrum Spinosum* Trec., (Family: Moraceae) are in Bangalore, Chickamagalur, Chitradurga, Davanagere, Dharwad, Hasan, Kodagu, Kolar, Mysore, Shimoga, Tumkur, Uttar Kannada, Mattuvil, Eastern ghats, vellimalai, Devanoor, Kollimalai hills, Perumakkai shola, Vengodai Shola, Mottukkada shola, Coromandal coast, oorani, puthupet, Pachamalai hills, Thiruvallur, Ramanathapuram and Pushpavanam are located in Nagapattinam district, Jambavanodai situated in Thiruvallur district and kollam in Kerala. It is also found in Eastern Himalayas and Deccan.

Phytochemistry

Major Phytochemicals present in this genus contain different natural compounds, mainly phenols, Terpenoids, Flavonoids, Tannins, alkaloids and many more to discover. Present knowledge about this endangered species of medicinal plant is still limited with respect to its phytochemistry and biological activity. One of the major chemical constituent of *Plecosperrum Spinosum* is Flavonoid [12].

Ethnobotanical and medicinal uses

Aerial parts useful in the treatment of diabetes [4]. The latex is used for tooth ache and also its stem is used for milk curdling [13]. Dried wood powder of this plant is mixed with coconut oil and applied on wound [14]. The use of stem thorn is used to cure cholera [15]. Both the bark and heart wood yield yellow dye and used in silk textile dyeing [2]. According to Ayurveda, the decoction of root is used for cold, cough and syphilis [16]. The various phytochemicals found in the plant are active chemical compounds which have been important role in treating disease such as cancer and Myocardial infarction [17]. The Ethnobotanical survey of medicinal plants in pachamali hills revealed the plant is used in variety of general ailments [18]. The plant

belonging to Moraceae family are considered to be a rich source of cardiac glycosides, which have an important role in treating heart related ailments [19-21]. The phytoconstituents present in this plant like phenols which is used for bacterial activity [22], The presence of Terpenoids indicates the presence of certain pharmacologically active groups such as steroids and cardiac glycosides [23], Flavonoids indicates that this plant have free radical scavenging activity and they tend to cause oxidative cell damage which indicates they are responsible for anti-cancerous activity, Tannins which play a role in the plant's defense mechanism and the presence of alkaloids can be used as effective pharmaceutical stimulants [24].

PHARMACOLOGICAL STUDIES

Biological activity [12]

The methanolic extract of *Plecosperrum Spinosum* was tested for anti-bacterial activity against

the various bacterial strains *Bacillus subtilis*, *Staphylococcus aureus*, *Escherichia coli*, *Streptococcus mutants*, *Proteus vulgaris*, *Klebsiella pneumoniae* and it was found that the zone of inhibition was higher against *Shigella flexneri* (16mm), *Micrococcus luteus* (16mm) strains at 375ug concentration for both the strains. The presence of phenolic compounds in *P.Spinosum* indicates that it can be used for the anti-bacterial activity.

CONCLUSION

In conclusion, this review confirms the potency of *Plecosperrum Spinosum*. As very limited information is still known for this species. This study could play an important role for the conservation of this plant and it will help in understanding the in-depth knowledge of the preliminary, phytochemical and pharmacological information about the role of species in the society.

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