Phyto-Pharmacology of *Caralluma Adscendens* Roxb: A Review

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ABSTRACT

Many herbal remedies have been employed in various medicinal systems for the treatment and management of various diseases. The plant *Caralluma adscendens* has been used in different system of traditional medication for the treatment of disease and aliments of human being. It is reported to contain various glycosides, flavonoids and steroids. It has been reported as an anti-inflammatory, antioxidant, anti-diabetic, analgesic, anti ulcers, antibacterial, hypoglycemic activities. There are also reports available for traditional uses of this plant for its dermatitis, anti-obesity, as a bloat, wound healing activities. Many isolated constituents from *Caralluma adscendens* lack the reports of pharmacological activities, which support its further pharmacological activities.

Key words: *Caralluma adscendens*, Phytochemistry, Pharmacological activities.

INTRODUCTION

Plants have played a significant role in maintaining human health. Herbal medicine is based on the premise that plant contains natural substance that can promote health and alleviate illness. In recent times, focus on plant research has increased all over world and a large body of evidence has collected to show immense potential of medicinal plants used in various traditional systems. Today, we are witnessing a great deal of public interest in the use of herbal remedies. Herbal drugs or medicinal plants, their extracts and their isolated compound have demonstrated biological activities. Such have been used and continued to be used as medicine in folklore for various disorders. Ethno pharmacological studies on such herbs important plant continued to interest investigators throughout the world.

Herbal drugs have been used since ancient times as medicines for the treatment of range of diseases. Medicinal plants have played a key role in world health. In spite of the great advances observed in modern medicine in recent decades, plants still make an important contribution to health care. Medicinal plants have become the focus of intense study In terms of conservation and as to whether their traditional uses are supported by actual pharmacological effects or merely based on folklore.[1] On such plant, *Caralluma adscendens* invites attention of the researcher worldwide for its pharmacological activities ranging from anti-inflammatory to anticancer activities. *Caralluma adscendens* Roxb. Belongs to family Asclepiadaceae.[2]

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Synonym: - *Caralluma fimbriata,* Comman Name: - Ranshbar, Maked Shenguli, Shindala Makadi, Vernacular Name**:** Q Kullee moofiyan, Kallimudayan (Tamil), KaraIlamu (Telegu), Yugmaphallottatna (Sanskrit), shindala makadi (Marathi).[1]

This plant grows throughout India, in deciduous and hilly areas. The latex cell usually contains latex rich in triterpines, other constituents includes alkaloids of Indole, Phenanthrine, Indozolidine, Glycosides, Saponin, Tannins. Many members are used in folk medicine in their countries.[3]

Is a variable herb, up to 1m in height with fleshy, almost leafless stem, deep purple, brown or yellowish white flower and 10-20 cm long slender follicles, distributed in India from Andhra Pradesh up to 600 m, a few varieties have been reported. The herb is consumed as a vegetable and also made into a pickle. The herb contains hydrocarbons N- pentatriacontane and glycosides.[4] The genus Caralluma

(Asclipiadaceae), which are comprises about 200 genera and 2500 species. The member of the genus is small plant, erect, fleshy. They have four grooved stems, round shape devoid of leaves and small flowers in several varieties of dark Colors. The species of Caralluma found in India are edible and form part of the traditional medicine system of the country.[5] The key phytochemical constituents of the herb are pregnane glycoside (25%), Flavone glycoside (chemotaxonomic marker), Saponin glycoside (10%), and Megastamine glycoside, Bitters (3%), Sitosterol and Tomentogenin.[6-7]

TRADITIONAL USES

Wild plant species *Caralluma adscendens* (Kundaetikommulu) used as food by tribal people by Andhra Pradesh. For chutney purpose.[10] A few varieties have been reported that herb is consumed as a vegetable and also made into a pickle.[2, 4]

In addition to Caralluma species commonly used in treatment of rheumatism, diabetes, leprosy, antipyretic and anthelmintic, for tumor, fungal diseases, snake, scorpion bite and antinociceptive activity.[11] Caralluma species have shown anti-inflammatory, anti-nociceptive,[12] antidiabetic,[13-14] gastric mucosa protecting, anti ulcer and cytoprotective properties. The species of Caralluma found in India are edible, their medicinal properties includes anti-inflammatory, anti-nociceptive, antioxidant, antiulcer, ant diabetic, carminative, antipyretic. Caralluma extract have also found to be appetite suppressant a properties which is well known to Indian tribals and hunters. Indian folklore record their records used as a potent appetite suppressant and weight loss promoter. The *Caralluma fimbriata* extract, in the form of capsules has been released under trade name GENASLIM for body weight control.[15-16] Bloat: Farmers believe that feeding leaves of *Caralluma adscendens* R. Br. (*muyal kathu, muyal, kurabu*) in odd numbers. i.e. 3, 5, 7 or 9, can relieve bloat. Treating Mastitis: The farmers in the study locale adopted the mixture of paste from ghee and leaves of Caralluma species to cure mastitis. It was found that 68% of the scientists could neither say the practice was valid nor invalid. The validity score of 81 was secured by the practice. Few scientists agreed upon the fact that the contents may have anti-inflammatory effect.[17] The plant is eaten as Vegetables, throughout India.[18] *Caralluma adscendens* (periyasirmankeerai) belongs to family Asclepiadaceae, wild edible plants used by palliyars of western ghat.[19]

Table 1: Taxonomic Classification of *Caralluma adscendens* Roxb.[8-9]

Taxonomy	Caralluma adscendens
Domain	Eukaryota
Kingdom	Plantae
Sub kingdom	Viridaeplantae
Phylum	Magnoliophyta
Subphylum	Spermatophytina
Infraphylum	Angiospermae
Class	Magnolliosida
Subclass	Lamiidae
Super order	Gentiananae
Order	Gentianales
Family	Asclepiadaceae
Genus	Caralluma
Specific epithet	adscendens
Variety	Gracilis
Botanical name	*Caralluma adscendens* var. *gracilis*

PHYTOCHEMICAL STUDY

In 2008, the Eleven novel pregnane glycosides, 2-7 and 9-13, of which four, i.e., 10-13, comprised a new pregnane- type genin exhibiting a hydroxymethylene instead of a Me group at C (19,) and the Known pregnane glycoside stalagmoside V were isolated from whole plants of *Caralluma adscendens* var. *fimbriata,* a native Indian succulent plant. Their structures were elucidated by extensive 2D-NMR spectroscopic studies.[20]

In 1982, the pentatriacontane which is the saturated hydrocarbon isolated from *Caralluma fimbriata* and confirmed it by its spectral data and elemental analysis.[21]

In 1976, dry plant material from *Caralluma fimbriata* was extracted with petroleum ether, benzene, ethanol; Pet ether extract gave a waxy solid which on spectral analysis. The benzene extract gives three comp. After chromatography a glycoside was partially identified.[22-23]

In1999, flavone glycoside isolated from three Caralluma species.[24]

In 2009, Phytochemical studies of botanicals: Hoodia gordonii and *Caralluma* species. They describe a phytochemical study of a species of Caralluma genus. *Caralluma adscendens* var. *fimbriata*, which is also known as "Indian Hoodia", Phytochemical investigation of a commercially available Caralluma sample was undertaken in order to generate better understanding of the chemical constitution of this species and to develop marker constituents for development of quality control methods. The chromatographic separation of methanolic extract of Caralluma species resulted in isolation of one new pregnane glycoside (Carallumoside A) and seven known steroid derivatives namely, Caraumbellogenin, Carallumoside B, boucerin, Caraumbelloside I, II, and III, and boerharigenin B. Most of the known compounds were previously reported from other species of Caralluma genus.[25]

In 1983, Qualitative chemical test was performed for the presence of different class of constituents in *Caralluma adscendens* plant extracts; these include alkaloids, flavonoids, saponins, tannins, etc.[26]