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Pharmacological over review on medicinal plant in *Malaxis rheedii* sw,

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Abstract
From the earliest starting point of development, the orchid is used as the remedy to cure different diseases and illnesses. Malaxis rheedii belongs to the orchidaceae family, distributed both in India and around the world in the cold zone. Traditionally, one of the best remedies against snake poisons, fever, Joint Pain, and Burns is used in the various portions of malaxis rheedii. They are also used in malignancy, rheumatoid arthritis, diabetes, inflammation, artherosclerosis, and ageing, malaria, and neurodegenerative disorders. Malaxis rheedii has been investigated by researches for its biological activities and therapeutic potentials such as the anti-diabetic, anti-fungal, anti-microbial, anti-bacterial, and Anti-cancer activities.

Keywords: malaxis rheedii, orchid, antibacterial, antidiabetics, and antimicrobial, anticancer

Introduction
Indian medicinal plant (orchid) *malaxis rheedii* used in ayurvedic medicine is discussed in 'charaka samhita', an indian therapeutic medicine is written by charaka in sanskrit, a few thousand years ago [1]. In ayurveda medication “ashtawarga” is a group of several crude drugs is used for preparation of tonic such as “chyavanprash” and including four orchid species out of which *m. rheedii* is additionaly among them [2]. Most of them consulted for the treatment of childhood illnesses such as bronchitis, epilepsy, etc. One of the main components of the medicines is *pachilaperumal* (*m. Rheedii*) [3]. Similarly the whole plant part of *m. Rheedii* is used by malayali tribes; [7] in yercaud hills, salem distric tamilnadu. They are used *M. rheedii* sw. (orchidaceae) is one of the best medicines for against snake poisons in tribes people; [8] fever, cancer; [9] joint pain and burns and etc [4]. This is one of the herbal species of the asthavarga group. It development or considered as the tonic and rejuvenative drugs. The bulb is sweet, refrigerant, aphordiasiac, styptic, antidysentric, febrifuge and tonic. It is valuable in sterility, vitiated states of pitta, and vata, seminal weakness, interior and external discharge, loss of bowelness, hyperthermia, anorexia,, burning and copying sensation and general debility [10].
Malaxis rheedei (orchidaceae) commonly named as jeevakam is a rare, terrestrial, endangered and medicinal orchid[5]. The plant distributed throughout the India mainly in Western Ghats regions [6]. The flower are pale yellowish to green shading; terminal recemes 8-20 cm long spikes born in pre-winter season in second year and onward. It has 2-3cm long bracts, lanceolate with acute apex, sepals are extensively lanceolate and laterals recurrved; patals are direct yet more limited then sepals; the fruit is a capsule, 6-8mm long, broadly ovoid- oblong, ribbed and of light yellow colour.

Plant description [11]
Taxonomy
Kingdom: plantae
Order: asparagales
Family: orchidaceae
Genus: malaxis
Species: malaxis rheedii

Vernacular name
Tamil: jeevakam
Telugu: jeevakamu
Kannada: jivaka
Malayalam: jeevakam
Hindi: jeevak
English: jeevak


a


b

Fig 1: a & b. *Malaxis rheedi*

Antioxidant activity

Antioxidants are broadly utilized as fixing in dietary enhancement and are exploited to maintain health and prevent oxidative stress-mediated illness, for example malignant growth, atherosclerosis, diabetics, inflammation and ageing, malaria, rheumatoid arthritis, neuro-degerative disorders has been as of late understood [12]. mainly phenol and flavonoid mixes compounds, believed to have more antioxidant activity than vitamin c, e and b-carotene is rapidly gaining consideration.

Methanolic crude extract of *m. Rheedii* which may be due to the presence of biomolecules with articulated antioxidant activity. Abts•+ radical scavenging movement additionally quickened with the expansion in the groupings of theextricate from 50-250µg/ml. Petroleum ether extract also exhibited greatest antioxidant activity. In like manner, it is proposed that the cancer prevention agent capacity of m.rheedii would be gainful in ensuring against the unfavorable impacts of oxidative damage [13].

Antidiabetic activity

Diabetic disease is a serious medical threat of public health [14]. There is a strong need of new drugs for the treatment and prevention of this disease. The recent advances in understanding the activity of intestinal enzymes [15]; (α-amylase and α-glucosidase) have led to the development of newer pharmacological agents. A high postprandial blood glucose response is associated with micro and macro-vascular complications in diabetes and more strongly associated with the risk for cardiovascular diseases [17].

The main aim of this investigation is to gather scientific proof and knowing the adequacy of natural constituents of plants that are used for treatment of diabetes. The exhibited properties [16]; of anti-diabetic in methanolic extract *of m. Rheedii* ascribes the presence of flavonoid, tannin, glycoside, resin, steroids, terpenoids, cardiac glycosides and triterpenoids etc. The crude methanolic extract of *m. Rheedii* inhibits the catalysts like salivary, amylase and glucosidase and shows potential activities against diabetes mellitus disease with ic50 value of 407.56 µg/ml (α-amylase inhibitory activity) and 380.66 µg/ml (α- glucosidase inhibitory activity) respectively. The current finding reveals that methanolic extract of *M. rheedii* productively overdose both alpha amylase and alpha-glucosidase enzymes in a concentration dependent manner. Numerous natural herbal extracts are used in ayurveda for the treatment of diabetes and have been reported to have antidiabetic activity in the inhibition potential towards alpha amylase and glucosidase activity. Crude methanol extract of *psidium guajava* leaves**[18];** and *caesalpinia digyna* root [19]; and the crude ethanolic extract of *C. Auriculata* flowers and of *C. angustifolia* whole plant part and leaves have been reported inhibition [20]; potential towards *in vitro* antidiabetic assays. Therefore methanol extract *malaxis rheedii* able to efficiently inhibit the activity of alpha-amylase and glucosidase, and the plant-based inhibitory ability provides a prospective diabetes treatment therapeutic approach.

Antimicrobial activity [21, 23]

Methanolic extract of the entire plant part of *m. Rheedii* most extreme antibacterial activity against *pseudomonas aeruginosa* (25.06mm) and *staphylococcus aureus* (25mm). *Acinetobacter baumannii* (20.07mm) and *salmonella typhi* (20.04mm) showed moderate activity and a least action was seen in *klebsiella pneumoniae*. Antifungal activity was greatest in *aspergillus flavus* (30mm) and moderate in *cryptococcus neoformans* (20mm). No activity was recorded in *trichophyton rubrum*, *candida albicans*, and *candida tropicalis*.in the evaluation of, whole plant extracts *m. Rheedii* exhibited extensive antibacterial and antifungal activity. However, the methanolic extracts and chloroform extract of whole plant parts exhibited more significant antibacterial activity than the petroleum ether and ethyl acetate extracts. *Pseudomonas aeruginosa* and *staphylococcus aureus* showed high activity. *Klebsiella pneumoniae* was the most susceptible bacteria, among the five bacteria tested and it showed the least activity. Ethyl acetate and methanol extract of whole plant parts exhibited more significant antifungal activity than the petroleum ether and chloroform. *Aspergillus flavus* showed the high activity. *Candida albicans* and *candida tropicalis* were the most susceptible fungus, among the five fungal tested and these fungus showed the least activity. These results confirm the traditional knowledge on medicinal uses of *m. Rheedii.*

GC-MS analysis [23, 27]

The gas chromatogram hows that the relative concentrations of various compounds are getting eluted a function of retention time. The height of the peaks indicates the relative concentrations of the compounds present in the plant. The mass spectrometer examine of the compound present in the plant. The mass spectrometer investigate of the compound eluted at various occasions to distinguish the nature and structure of the compound. The large compounds fragments into small compounds give rice to the appearance of peaks at different ratios. These mass spectra are a fingerprint of the compound from the data library that can be described. The current investigation, the GC-MS study of malaxis rheedii indicated the presence of 42 compounds (phytochemical components) in entire plant part of methanolic extract that could contribute the therapeutic process in nature of the plant. The recognizable proof of the phytochemical compounds was confirmed based on the peak area (%) and retention time (RT). As of late gas chromatography – mass spectrum (GC-ms) studies have been progressively applied for the analysis of medicinal plants a significant technique valuable tool for the investigation of essential oil, alcohols, acids, esters, alkaloids, steroids, amino and nitro compounds etc. The GC MS analysis of the methanolic extract came about many compounds which have assorted use. Malaxis having anti-diabetic, antibacterial, antifungal, antioxidant and anticancer properties have been distinguished. In addition to these, the plant is broadly used against snake poison by tribal people of the area. GC-ms strategy is a direct and quick expository methodology approach for identification of potential bioactive from plant extracts. The results obtained through such studies are supporting the medico-potentiality some valuable plants. The current investigation, there are around 42 compounds present in methanol extract of whole plant part of malaxis rheedii by GC-MS method. Such results also highlight the potentiality of these species in anticarcinogenic, antidiabetic, antimicrobial and antioxidant properties.

Anticancer activity [28, 32]

The *in-vitro* confirmation of their toxicity on human cervical cancer cell line (*hela*) and breast cancer cell line (mcf-7) were studied using mtt assay. The cytotoxicity study was completed out for plant methanolic extract of the whole plant part of *m. Rheedii*. The methanol extract was screened for its cytotoxicity against two human cancer cell lines at different concentrations to determine the ic50 by mtt assay. Cytotoxicity of methanol extract of the whole plant part of *m. Rheedii* against *hela* cell was found to be 7.3%, 16.6%, 25.4%, 36.3%, and 47.1% toxic at a concentration of 18.75, 37.5, 75, 150, and 300 µg/ml; and cytotoxicity of methanol extract of *m. Rheedii* against mcf-7 cell was found to be 18.75, 37.5, 75, 150, and 300 µg/ml toxic at a concentration of 7.9%, 13.9%, 26%, 48.4%, and 66.3%, respectively. Ic50 value of 167.76 µg/ml was obtained for breast Caner cell line (mcf-7). Cytotoxicity of methanol extract of the whole plant part of *m. Rheedii* against mcf-7 was found to kill the cell proliferation, and it showed strong cytotoxicity than *hela* cell. The percentage inhibition was found to be increase with an increasing in concentration of test compounds.

Conclusion

Malaxis rheedii is most traditionally used in katunayyaka tribes in westernghats to cure many aliments, which forms a basis to carry out the research activities. The different part of the malaxis rheedii are being used in the traditional system of medicine to cure various disease of human kinds. Researchers are confirmed the few pharmacological activities of the plant proved to be safe.

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