



A Review on Safed musli (*Chlorophytum borivilianum*)

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Abstract

Safed Musli is known for its roots and saponins components that are associated with various medicinal properties. In recent years, this plant has gained much popularity due to its economic value. In Ayurveda, *Chlorophytum borivilianum* belongs to the group of "Vajikaran Rasayana" corroborated to its rejuvenating, aphrodisiac, natural sex tonic properties and effective in alleviating sexual disorders. Some reported therapeutic and pharmacological properties of Safed Musli include aphrodisiac, immunomodulatory, antimutagenic, antidiabetic, antioxidant, antiulcer, adaptogenic, and antimicrobial. In this review article, the pharmacological properties, phytochemistry, ayurvedic and folk uses of Safed Musli are briefly summarized.

Key Words: Safed Musli, Phytochemistry, Aphrodisiac, Ayurveda.

Introduction

Chlorophytum borivilianum is a widely growing species and an integral part of Ayurvedic, Unani, Homeopathic and Allopathic systems of medicine, where root of the plant holds principal place. Traditionally, safed musli is considered as a general health promotive tonic and has been used to treat various male sexual disorders.¹ *Chlorophytum Borivilianum* belongs to the family Liliaceae. It is the most eminent medicinal plant, which is commonly known as Safed Musli, Dholi Musli.² The plant is well known for its tuberous roots because of bioactive constituents like flavonoids, alkaloids, saponins, phenols, steroids, triterpenoids, vitamins and tannins.³ *Chlorophytum borivilianum* is now the most commercially exploited species due to its celebrated aphrodisiac as well as immunomodulatory properties. Only in India it has been utilized as a source of medicine and recently, its new found status as the herbal alternative to 'Viagra' raised its popularity even among western countries.⁴ It is effective against male sexual disorders such as erectile dysfunction, premature ejaculation, infertility and is used as a health tonic.⁵ This plant is promoted and protected by the Medicinal Plant Board of India, as it is recognized as 26th among the top priority medicinal plant because of its high medicinal properties. The Indian government has started promoting its cultivation due to its high economic perspective.⁶ This review is an attempt to integrate the available information concluding the therapeutic utility of *Chlorophytum borivilianum*. Thus, the current review is written in order to provide baseline information to the researchers who wish to carry forward the research on this plant.

History

About 300 species are distributed throughout the tropical and subtropical parts of the world. Tropical and subtropical zones of Africa are the probable centers of origin of the genus. In India, it is considered as a valuable medicinal herb, whereas in other parts of the world it is being used as ornamental plant. Safed musli is widely distributed in India mainly in Southern Rajasthan, Western Madhya Pradesh North Gujarat and few parts of Karnataka. But, continuous exploration has decreased its frequency, distribution and the quality. This species has low rate of regeneration and prone to attack by many diseases. Among them tuber-rot and crown-rot are more prevalent in Agricultural fields at Mysore district of Karnataka State in India. Chlorophytum⁷ is a genus of about 200-220 species of evergreen perennial flowering plants in the Agavaceae, native to the tropical and subtropical regions of Africa and Asia.

They grow to 10–60cm tall, with a rosette of long, slender leaves 15–75cm long and 0.5–2cm broad, growing from a thick, fleshy rhizome. The flowers are small, usually white, produced on sparse panicles up to 120cm long; in some species the panicle also bears plantlets, which take root on touching the ground. Chlorophytum comosum, also called the Spider Plant, a native of South Africa, is a very popular houseplant in its variegated form. Chlorophytum borivilianum is a native of India, used and grown as a medicinal plant.

Reported Therapeutic and Pharmacological Properties

Aphrodisiac:

As Safed Musli is used in Ayurveda medicinal system for its aphrodisiac property as a Vajikaran Rasayana, this improves the impotency and cures sexual disorders. This herb is scientifically studied in vitro to evaluate its aphrodisiac property in a rat model. The root powder of this plant was orally administered at 125 mg/kg and 250 mg/kg of dosage in Wistar albino rats and observe for the next 3 hours for sexual behavior using receptive females and further for the next 60 days for sperm count. The dosage of 125 mg/kg showed significant aphrodisiac properties on days 1, 7, 14 and 21. A substantial rise in the sperm count was also observed after six months.⁸

Antimicrobial

The methanolic callus extract of Safed Musli was used as a substrate to synthesize silver nanoparticles (AgNPs) to evaluate the antimicrobial activity using different strained bacteria's and pathogenic microbes and cytotoxicity against human colon cancer cells. AgNPs showed significant inhibitory effects against other pathogenic microbes such as Pseudomonas aeruginosa, Methicillin – resistant E. coli, Staphylococcus aureus, Bacillus subtilis and Candida albicans.

Immunomodulatory

The in vivo study was carried out on Wistar strain albino rats for humoral response to sheep red blood cells (RBCs) and immunoglobulin - level to determine the role of CBP (polysaccharide fraction) in modulating immune function by using enzyme – linked immunosorbent assay (ELISA). Results showed that the aqueous extract of the plant exhibited notable immunomodulatory activity.

Antimutagenic and Antioxidant

The methanol extract of C. borivilianum seeds was evaluated for antioxidant and antimutagenic activity using various standard in vitro assays such as DPPH free radical scavenging assay, deoxyribose degradation, lipid peroxidation, chelating power assay, plate incorporation assay and reducing power assay. The significant antimutagenic activity was shown by methanolic seed extract in both co-incubation and pre-incubation modes in the presence and absence of S9 using plate incorporation assay.

Antiulcer

The alcoholic root extract of *C. borivilianum* was evaluated for antiulcer activity. The significant antiulcer activity was exhibited by 50% alcoholic extract against ethanol - induced Pylorus ligation - induced gastric ulcers in Sprague - Dawley rats at the dosage of 100 mg/kg where omeprazole was used as a standard drug.⁹

Conclusion

It is evident from the available literature that *Chlorophytum borivilianum* roots are the most investigated part of the plant. Since *Chlorophytum borivilianum* is predominantly utilized as aphrodisiac, further studies concerning its extent of efficacy are warranted as compared to its commercial counterparts, as well as clinical studies on this plant have to be encouraged to evaluate effects on human model.

Moreover, the plant needs to be explored more in research to identify its more pharmacological activities. Besides this, Safed Musli holds a significant economic value and is used as a health -promoting drug. However, overexploitation, deforestation, low productivity, insufficient knowledge of its production are factors responsible for the species counted in the Red data book as critically endangered species. Therefore, conservative strategies and some innovative plans should be aligned to protect the species from becoming endangered.

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