

# Indian Herbal Aphrodisiacs: A Review of Ashwagandha and Safed Musli

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## ABSTRACT

A common male sexual illness that has an impact on one's physical, mental, and interpersonal well-being is erectile dysfunction (ED). Sexual dysfunction affects more than 50% of males between the ages of 40 and 70, by 2025, there will be more than 300 million cases worldwide. Synthetic treatments that are now available alleviate symptoms but do not restore spontaneous erectile function and may result in side effects, tolerance, or psychological reliance. ED is categorized under *Klaibya* in traditional Indian medicine, which suggests using *Vajikarana* herbs to restore male vigor. This evaluation assesses *Safed Musli* (*Chlorophytum borivilianum*) and *Ashwagandha* (*Withania somnifera*) for the treatment of ED. Research demonstrates that *Safed Musli* improves sexual response through NO-cGMP-mediated smooth muscle relaxation, antioxidant endothelium protection, hypothalamic-pituitary-gonadal axis activation, and cortisol decrease. Steroidal saponins of androgenic significance, such as stigmasterol, hecogenin, and chlorophytosides, are important bioactives. By regulating the HPA axis, increasing Leydig cell testosterone production, maintaining nitric oxide produced from eNOS, lowering inflammation, and promoting penile perfusion, *ashwagandha* promotes erectile function. Functional alkaloids, sitoindosides, and withanolides are important active ingredients. At suggested dosages, both herbs show enhanced libido, endurance, and hormonal balance along with a good safety profile..

**Keywords:** Erectile dysfunction, *Vajikarana* herbs, *Ashwagandha*, *Safed Musli*, NO-cGMP pathway, Withanolides, Steroidal saponins, HPA axis modulation.

## INTRODUCTION

The inability to get and maintain an erection long enough for satisfying sex is known as ED (erectile dysfunction) (1). According to recent statistics, 52% of men between the ages of 40-70 globally suffer from some type of sexual dysfunction, whether physical or mental (Figure 1)(2). By 2025, the number of people experiencing ED is expected to rise to about 322 million worldwide. Although ED is not fatal, it can severely disrupt a man's ability to enjoy a satisfying sex life. This will ultimately lower his overall quality of life(3). Based on the above information, we realise the great social impact of this condition. As such, researchers continue to work to improve the quality of life for men who are experiencing ED. In addition, there continue to be many questions surrounding the

physiology and the treatment of ED. There has yet to be a treatment found that can completely restore normal and spontaneous erectile function (EF)(4).

The WHO defines sexual health as "fundamental to the physical and emotional health and well-being of individuals, couples and families, and to the social and economic development of communities and countries." ED (erectile dysfunction) negatively impacts the quality of life of both patients and their partners and is related to relationship problems(5).

Herbal remedies are health supplements made from plants and/or plant parts, including single or multiple ingredients, in forms such as tablets, capsules, creams, or tinctures. Herbal remedies are commonly used all around the world, especially in Asia, the Middle East, Africa and specific areas of Europe and the Americas.

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Herbal remedies are used to treat a variety of conditions and are also popularly used to help promote general health. Many different natural remedies are being promoted as ways to regain the ability to get erections, to improve sexual virility and to support the maintenance of sexual health(6).

As per Ayurvedic literature, sexual dysfunctions fall under the category of Klaibya. The Ayurvedic classic Susruta describe the condition known as Manasa Klaibya, which is very similar to Psychogenic Erectile Dysfunction. Susruta describes Hetu Viparyaya Chikitsa and a variety of Vajeeekarana Yogas as the best methods of treatment for Manasa Klaibya (Psychogenic Erectile Dysfunction). To treat Psychogenic Erectile Dysfunction, the drugs used should have properties of Vajeeekarana and be able to pacify the vitiated Manasika doshas(7).

## MATERIALS AND METHODS

Google Scholar was used to conduct a thorough literature search (2000–2025) using MeSH terms including "traditional medicine," "complementary medicine," "erectile dysfunction," "herbal," and "sexual dysfunction." There were only peer-reviewed, English-language studies on male sexual dysfunction. Expert recommendations and reference list screening were used to find more pertinent papers.

## RESULTS

The use of "Vaji-Karana Dravyas" is well documented in Indian classical Ayurvedic literature such as Sushruta Samhita and Charaka Samhita. Vaji-Karana Dravyas are substances that enhance male reproductive function, including enhancing libido or fertility. In addition to their use in classical Ayurvedic literature, these substances are also used in many proprietary formulations for male sexual dysfunction. There are several plants that are traditionally used as Vaji-Karana Dravyas and have been recently studied by experimental and clinical research for both their pharmacological basis and their clinical effectiveness. The traditional plants that are commonly used as Vaji-Karana Dravyas include Ashwagandha and Safed Musli. The cultivation area (Figure 2) of the plants that are commonly used as Vaji-Karana Dravyas.

### Major Indian herbs used in erectile dysfunction

### Safed Musli

Safed Musli is a medicinal plant that has been referred to as a "Divya Aushad" (miraculous medicine) or "Rasayana" (elixir of life), a natural remedy and God-given wonder drug for sexual strength as well as overall weakness(8). The term "Rasayana" consists of two Sanskrit words; "Rasa", which means elixir, and "Ayana", which means house. It is a magical herb that has been used for thousands of years and is a substitute for chemical Viagra. Safed Musli is scientifically known as *Chlorophytum borivillianum*, belonging to the Liliaceae family. Also known as Desi Viagra, it is a very popular aphrodisiac agent and is devoid of any side effects. It is commonly prescribed for enhancing male virility and to counteract the symptoms of fatigue(9). The most common use of SafedMusli is for men who suffer from low sperm count and low libido. The aphrodisiac properties of SafedMusli have provided a great deal of relief to those suffering from Erectile Dysfunction, as well as to enhance male potency. It is also a spermatogenic agent and helps to treat impotence due to the glycoside content. If a person has aphthae of the mouth and throat, the root powder of the Safed Musli can be fried in Ghee and then chewed(10). Plans are underway to convert it into chip/flake form so it can be taken as a nutritious breakfast in countries such as the USA and England. In the Indian traditional medical system, Safed Musli is regarded as a "White Gold." The Medicinal Plant Board of India is promoting and protecting the plant as it is ranked as the 26th of the 50 highest priority medicinal plants based upon its high medicinal value. Table no. 1,2 represents the names and taxonomical classification of the *C. borivillianum* plant(11).

### Bioactive constituents

Safed Musli (*Chlorophytum borivillianum*) is rich in diverse phytoconstituents and nutrients. The tubers contain approximately 35–45% carbohydrates and 25–35% dietary fiber, along with alkaloids (15–25%), proteins (5–10%), and saponins (2–20%). Phytochemical investigations have revealed that Safed Musli serves as a reservoir of more than 25 different bioactive components, including vitamins, alkaloids, carbohydrates, proteins, steroids, saponins, polysaccharides, mucilages, phenols, resins, and



essential minerals such as potassium, calcium, and magnesium (Table 3) (12).

Among the steroidal constituents, stigmasterol is present in the range of 1.9–3.5%. The carbohydrate fraction comprises both non-reducing sugars (15–17%) and reducing sugars (20–25%), with monosaccharides such as galactose (3.8%), arabinose (0.79%), rhamnose (0.78%), xylose (0.76%), and glucose (0.73%) being identified (9).

Recently, saponin and Stigmasterol, named as Chlorophytoside-I (3b, 5a, 22R, 25R)-26-( $\beta$ -D-glucopyranosyloxy)-22-hydroxy-furostan-12-one-3-yl-O- $\beta$ -D galactopyranosyl(1-4) glucopyranoside and furostanol, have been separated. In Safed Musli, the Medicinal Activity is due to the presence of two major groups of compounds, i.e., Saponin & Alkaloids. Hecogenin & Stigmasterol are two of the most important types of Saponins present in Safed Musli. Stigmasterol is structurally very close to Testosterone(8). The structures of some significant phytochemical constituents of *C. borivilianum* are shown in figure 6,7.

### Mechanism of Action

The use of Safed Musli (*Chlorophytum borivilianum*) as an Ayurvedic Vajikarana has been widely accepted in the treatment of erectile dysfunction (ED). Multiple physiological mechanisms contribute to the potential therapeutic effects of Safed Musli on erectile dysfunction (13). The root tubers of Safed Musli contain various bioactive compounds such as steroidal saponins, alkaloids, polysaccharides, and flavonoids that can potentially enhance sexual function in men (14). Steroidal saponins of Safed Musli will stimulate the hypothalamic–pituitary–gonadal axis, thus increasing the luteinizing hormone and testosterone levels. This may increase libido and erectile response (15). In addition, the action of Safed Musli can cause vasodilation by stimulating the NO-cGMP pathway; this results in the relaxation of corpus cavernosum smooth muscle cells and increased blood flow into the penis. Furthermore, the antioxidant activity of Safed Musli can protect from endothelial and neuronal damage caused by oxidative stress and, therefore, it can be useful in cases of diabetic or age-related erectile dysfunction. Finally, the adaptogenic and anti-stress properties of Safed Musli can help to

lower the cortisol level and improve the physical and mental vigour; this may be beneficial in psychogenic erectile dysfunction (16). In summary, the use of Safed Musli can enhance erectile function by improving hormonal balance, vascular perfusion, antioxidant defence, and sexual potency; therefore, it may be considered as a promising herbal drug for erectile dysfunction.

### Benefits (17)

- Prevents and stops early ejaculation.
- Causes a man to be able to maintain his erection through the entire sex act.
- Increases a man's strength, energy and endurance.
- Improves the semen quality.
- Substantially increases sperm count.
- Significantly increases the volume of ejaculation.
- Helps control early ejaculation.
- Increases libido.
- Increases sex confidence.
- Persistent results all year long with the same effect.

### Adverse Effects

If consumed as directed, there are no negative effects. Increased dosages might cause gastrointestinal distress.

### Ashwagandha

Ashwagandha is named due to its root's distinctively pungent odor, which smells like a damp horse ("ashwa" = horse, "gandha" = smell). As an important medicinal herb, it has been utilised in Ayurvedic and traditional medicine for over three thousand years(18). In India, Ashwagandha is often referred to as "Indian Winter Cherry" or "Indian Ginseng". The Nagori Ashwagandha is considered to be the highest quality of all Ashwagandha varieties (19). Ashwagandha is typically available as a churna, which is a fine powdered form that can be taken by mixing it with ghee (clarified butter), water, or honey. It supports the functioning of the nervous system and brain and also helps support memory. It promotes a balanced sexual and reproductive system (20). It is a common component of a wide array of formulations



prescribed for various musculoskeletal disorders (i.e., arthritis, rheumatism), as well as a general toner to enhance vitality and promote overall longevity and health and to help prevent illness in athletes, pregnant women, and the elderly (21). Table no. 4,5 represents the names and taxonomical classification of the *Withania Somnifera* plant (21,22).

### Bioactive constituents

*Withania Somnifera* has been studied extensively to determine its chemistry and there are many different compounds that have been identified. Steroid lactone-based compounds known as withanolides account for most of the pharmacological properties of the root system of *W. Somnifera* (23). A wide variety of chemical compounds have been found in various parts of *W. Somnifera* through phytochemical analysis, including more than 12 alkaloids, 40 withanolides, and the rare sitoindosides (Table no.6) (24). The biologically active compounds of *Withania Somnifera* include alkaloids such as anaferine, isopelletierine, anahygrine, cuseohygrine, and others; saponins; and steroid lactones, which include withanolides and withaferins. *Withasomniferin-A* and *5-Dehydroxy-withanolide R* were produced from the aerial parts of *W. Somnifera* (24,25). The structures of some significant phytochemical constituents of *C. borivilianum* are shown in Figure 11,12,13.

### Mechanism of Action

Ashwagandha is utilised for adjunctive therapy in treating several types of psychosomatic disorders and has been found to have positive effects upon tissue health, mental & physical endurance, and neuromuscular power.

*Withania somnifera* has multiple mechanisms of action that are responsible for its therapeutic effect in treating erectile dysfunction, primarily through its active ingredients, including withanolides, withanosides, and sitoindosides. Ashwagandha functions as an adaptogen and reduces psychological stress and anxiety via modulation of the HPA (hypothalamic-pituitary-adrenal) axis and subsequently decreases cortisol levels. This is particularly helpful for individuals experiencing psychogenic erectile dysfunction. The withanolides increase testosterone production by enhancing the

functioning of the Leydig cells and modulating the sex hormones involved in reproduction, therefore increasing sexual desire and sexual function. In addition, Ashwagandha's strong antioxidant and anti-inflammatory capabilities preserve the integrity of endothelial cells from oxidative damage and maintain the ability of endothelial nitric oxide synthase (eNOS) to produce nitric oxide, which is required for the relaxation of cavernous smooth muscle and achieving penile erection (26). Furthermore, alkaloids and steroid components of Ashwagandha promote autonomic balance and relax smooth muscles that facilitate penile vasodilation and increased blood flow. Therefore, the coordinated effects of Ashwagandha on hormone regulation, stress reduction, endothelial function, and relaxation of vascular smooth muscles provide the rationale for its utility in managing erectile dysfunction, especially those cases that are related to stress and mild-to-moderate in nature (25).

### Benefits (24)

- Acts as a powerful adaptogen, reducing stress and anxiety
- Improves sexual health and fertility by supporting testosterone levels
- Enhances erectile function and libido
- Boosts immunity and resistance to infections

### Adverse Effects

Ashwagandha may cause mild gastrointestinal upset, drowsiness, headache, or nausea (26).

### CONCLUSION

According to recent research, Ashwagandha (*Withania somnifera*) and Safed Musli (*Chlorophytum borivilianum*) are Vajikarana herbs with substantial potential for enhancing erectile function and restoring male vitality. Hormonal up-regulation, endothelial protection, antioxidant defense, NO-cGMP-dependent cavernous smooth muscle relaxation, stress attenuation through HPA modulation, increased Leydig cell steroidogenesis, improved penile perfusion, and autonomic stabilization are some of the complementary mechanisms that mediate their effects. While gastrointestinal discomfort is still the most frequently reported side effect of supratherapeutic use, clinical



evidence also shows benefits in libido enhancement, spermatogenesis, sexual stamina, semen quality, and psychological confidence with minimal adverse effects under recommended dosing.

For ED, these herbs offer a safer and more affordable integrative alternative or supplementary approach, especially when stress, age, metabolic problems, or low androgen levels are involved. To improve translational acceptability and worldwide therapeutic use, future studies should prioritize large-scale randomized clinical validation, standardized formulation development, pharmacokinetic characterization, and molecular interaction mapping.

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