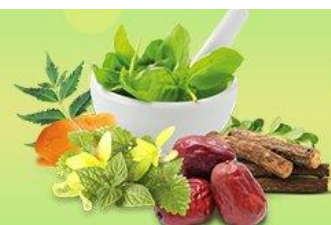


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## ***Musli Siyah* (*Curculigo orchoides* Gaertn.): A comprehensive review of ethnomedicinal, pharmacological and Unani perspectives**

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### **Abstract**

*Musli Siyah* (*Curculigo orchoides* Gaertn.), commonly known as Black Musli, is an important medicinal plant widely recognized in both traditional Unani medicine and modern phytotherapy. In Unani literature, it is categorized as *Muqawwi-e-Bah* (aphrodisiac), *Muqawwi-e-Aasab* (nervine tonic), and *Muqawwi-e-Badan* (general tonic), employed in the management of sexual debility, infertility, seminal weakness, and general fatigue. Its temperament (*Mizaj*) is described as *Har Yabis* (hot and dry), which aligns with its role in improving vigor, stamina, and reproductive health.

Modern scientific investigations validate many of these classical claims. The rhizomes of *C. orchoides* contain bioactive compounds such as curculigoside, saponins, flavonoids, and glycosides, which demonstrate antioxidant, adaptogenic, immunomodulatory, hepatoprotective, anti-inflammatory, and aphrodisiac activities. Phytochemistry and Pharmacological studies have reported its efficacy in improving spermatogenesis, enhancing testosterone levels, and protecting against oxidative stress-induced infertility. Moreover, its anti-diabetic, anti-cancer, and neuroprotective properties have expanded its therapeutic potential beyond reproductive health.

Despite its wide traditional usage, issues such as overharvesting, poor propagation, and adulteration pose threats to its availability and therapeutic authenticity. Hence, sustainable cultivation, standardization of extracts, and clinical validation are essential to establish its safety and efficacy on scientific grounds.

This review integrates Unani and modern perspectives on *Musli Siyah*, highlighting its ethnomedicinal significance and pharmacological potential. Bridging traditional knowledge with contemporary evidence provides a holistic understanding of this valuable herb and supports its rational application in modern healthcare.

**Keywords:** *Musli Siyah*, *Curculigo orchoides*, Unani medicine, aphrodisiac, pharmacology and phytochemistry

### **Introduction**

*Musli Siyah* (*Curculigo orchoides* Gaertn.), belonging to the family Hypoxidaceae, is a perennial herb traditionally valued for its medicinal properties in various systems of medicine, including Ayurveda, Siddha, and Unani. It is commonly referred to as “Black Musli” and has been widely acclaimed for its aphrodisiac, rejuvenating, adaptogenic, and immunomodulatory actions. In the modern pharmacological and phytochemistry context <sup>[1, 2, 11]</sup>, *Curculigo orchoides* has been extensively investigated for its bioactive phytoconstituents such as saponins, flavonoids, alkaloids, phenolic compounds, and curculigosides, which contribute to its antioxidant, anti-inflammatory, anti-osteoporotic, hepatoprotective, and antidiabetic properties. These findings provide a scientific basis for its long-standing use as a potent rasayana drug for vitality, fertility, and general health <sup>[2, 5, 35]</sup>.

In the Unani system of medicine, *Musli Siyah* is described as a highly esteemed tonic and *Muqawwi-e-Bah* (aphrodisiac) drug, classified under *Mufarreah* and *Muqawwi Aza-e-Raeesa* (tonics for vital organs). It is traditionally prescribed for conditions such as *Su-e-Mizaj Barid* (cold temperament disorders), general debility, sexual weakness, oligospermia, and infertility. Unani scholars have highlighted its *Mizaj* (temperament) as *Har yabis* (hot and dry), making it particularly effective in restoring vitality, enhancing sexual vigor, and improving physical strength. Classical Unani texts also mention its role as a rejuvenator, aphrodisiac, and nerve tonic, often used in compound formulations like *Majoon* and *Itrifal* for male reproductive disorders and general debility. A natural therapeutic agent for reproductive health, vitality, and systemic wellbeing <sup>[3, 4, 6, 7, 8, 14]</sup>.

## Materials and Methods

A detailed literature survey was undertaken by accessing multiple online databases and scientific platforms, including PubMed, Google Scholar and other recognized sources of academic information. The search strategy employed specific keywords such as *Curculigo orchioides*, *Musli Siyah*, Unani medicine, and traditional practices. In addition to online material, classical Unani texts in Urdu and English were examined, along with standard pharmacological handbooks, to provide a comprehensive understanding. The botanical classification and identity of the plant were authenticated through the World Flora Online database. For accuracy in classical terminology, the officially recognized Unani medical glossary published by the Central Council for Research in Unani Medicine (CCRUM) was applied. This article highlights the plant's morphology, pharmacological functions, ethnomedicinal applications, therapeutic benefits, and nutritional value within the framework of Unani medicine.

## History

*Curculigo orchioides* Gaertn, of the *Amaryllidaceae* family has different names such as Golden Eye Grass, Talamuli, Kalimusli, Nilappani, and Nilapanaiin English, Sanskrit, Hindi, Malayalam, and in Tamil, respectively (Joy *et al.*, 2004) [18].

Originally native to India, *C. orchioides* occur everywhere, especially in rocky areas, especially at sea level and up to 2,300 m above the sea level (Mehta and Nama, 2014) [19]. Tonic medicine has been used for centuries with the rhizome of *C. orchioides* by the Chinese since the Tang Dynasty for the maintenance of health, energy, and nourishment of renal and hepatic systems. The root of *C. orchioides* was commonly used in the treatment of impotence, limb limping, lumbar and knee joint arthritis, and diarrheal water (Chauhan *et al.*, 2010) [20]. Jaundice, asthma, urinary and skin diseases, and bladder and kidney infections were treated with *C. orchioides* in the traditional System of medicines (Khare, 2007) [1].

## Botanical description:

*Curculigo orchioides* Gaertn (Kali Musli/Golden Eye Grass)

Belonging to the family *Hypoxidaceae*, *Curculigo*

*orchioides* is a perennial herb of significant medicinal value. Though it was initially grouped under *Amaryllidaceae* by Bentham and Hooker, subsequent taxonomic revisions by Hutchinson, based on detailed morphological studies, recognized *Hypoxidaceae* as a distinct family [18].

## Morphology & Habit

This herb grows from thick, elongated underground rhizomes. The leaves are radical, sessile, and linear-lanceolate in shape, often glabrescent in texture. Its scape is characteristically short and flattened [18].

## Flowers & Fruits

The plant produces small racemes of bright golden-yellow blossoms. Flowers exhibit sexual dimorphism: the lower ones are female, while the upper are male. Each flower has six-partite perianth segments, six stamens with short filaments, and an inferior three-celled ovary. Fruits appear as beaked capsules, with seeds that are black, rounded, and distinctly rugose [18, 16].

## Phenology

Flowering and fruiting occur during the monsoon months, from June to September [18].

## Distribution

It can be found in specific regions such as Indroda Park and similar habitats pharmacologically, *Curculigo orchioides* holds significant importance in traditional medicine. The rhizome is considered aphrodisiac, appetizer, and tonic, with applications in the management of sexual debility, arthritis (particularly lumbar and knee joints), asthma, piles, indigestion, joint pains, and watery diarrhea [18].

## Pharmacognosy:

In *Curculigo orchioides*, the pharmacognostic identification is primarily based on microscopic markers such as the size and structure of starch grains, the configuration of calcium oxalate crystal clusters, and the presence of mucilage cavities located at the periphery of the rootstock. These diagnostic parameters were extensively described in earlier works by Aiyer and Kolammal (1963) and later by Raghunathan and Mitra (1982). For therapeutic applications, thin rhizome slices, carefully selected without root hairs, are incorporated into drug formulations [18, 22, 23].

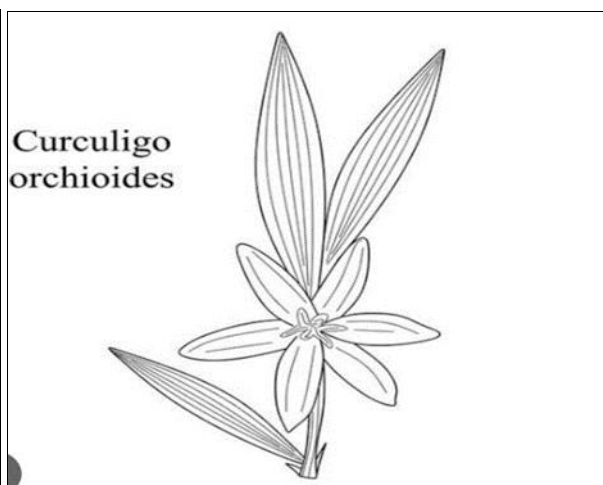


Fig 1 a & b: *Curculigo orchioides* plant (Picture and sketch)

**Taxonomy and Nomenclature** [2, 11, 15, 16, 22]:

- **Scientific name:** *Curculigo orchoides* Gaertn.
- **Common names:** Yellow Groundstar, Black Musale, Kali Musli.

Kingdom	Plantae
Phylum	Tracheophyta
Class	Liliopsida
Order	Asparagales
Family	Hypoxidaceae
Genus	Curculigo
Species	<i>Curculigo orchoides</i>

**Biological source:** Plant

- **Collection and cultivation:** *Curculigo orchoides* is primarily collected from its native habitats in sub-tropical Himalayan regions and the Western Ghats of India, thriving in well-drained laterite soils typical of tropical climates. Cultivation involves planting rhizomes or seeds in sandy-loam soils with partial shade, and the plant is typically harvested between July and October when its tuberous roots reach maturity. The species is noted for its preference for rocky crevices and altitudes up to 400 meters, reflecting its adaptability to specific ecological conditions [2, 11, 15, 16].
- **Macroscopically:** It is characterized by its tuberous

roots, linear-lanceolate leaves with parallel venation, and small yellow flowers clustered on short spikes, typically growing in rocky or lateritic soils at altitudes up to 400 meters [2, 11, 15, 16].

- **Microscopically:** The rhizome displays a parenchymatous cortex, scattered vascular bundles, and secretory ducts containing phenolic compounds, while the roots show a uniseriate epidermis, multilayered hypodermis, and starch-rich parenchyma cells, reflecting its adaptation to arid environments [2, 11, 15, 16].

**Musli siyah in Unani medicine**

**Mahiyat (Morphology):** *Musli siyah* is a small herbaceous plant characterized by smooth, hollow and palm-like leaves. The plant grows rapidly, and its underground parts (roots and rhizomes) are valued for medicinal purposes, particularly in improving digestion and enhancing sexual health. Its taste is mildly sweet with moderate persistence. The tuber is hard, with about one-third of its pulp appearing black and having a hollow interior. According to unani physicians, the plant bears flowers as soon as the leaves emerge from the ground. The flowers are small, golden yellow in color, resembling both palm flowers and carnations, and measure approximately one and a half hand span in size [3, 4, 6, 9].

**Fig 2 a & b:** Market crude drug and powder**Mutaradifat (Vernacular names):** [3, 4, 6, 9, 16, 22]

- **English:** Golden Eye Grass, Black Musli, Yellow Groundstar
- **Urdu:** *Musli siyah*
- **Hindi:** Kali Musali / Kalimusali
- **Sanskrit:** Talamuli, Musali, Musani
- **Malayalam:** Nilappana
- **Tamil:** Nilappanai, Tharaippanai
- **Telugu:** Nela taty gadda, Nalla tadi, Pilli tega, Sukka dumpa
- **Kannada:** Nela taale gaddi
- **Odiya:** Talamuli, Kovaa kaanda
- **Bengali:** Talamuli

**Parts medicinally used:** roots; whole plant<sup>3,4,6,9,16</sup>**Ajza-i-Mustamila (parts used):** <sup>3,4,6,9,16</sup>

- Roots
- Stems
- Leaves

- Flowers

**Mizaj (Temperament):** Hot 1<sup>0</sup> and dry 2<sup>0</sup> [3, 4, 6, 9, 16, 22]

**Nafa-e-khas (Mainaction):** [3, 4, 6, 9, 16]

- *Muqawwi-e-bah* (Aphrodisiac)
- *Muharrik* (Stimulant)
- *Muqawwi* (Tonic)

**Afal (Actions):** [3, 4, 6, 9, 16]

- *Muqawwi-e-bah* (Aphrodisiac),
- *Muharrik* (stimulant),
- *Muqawwi-e-Meda* (digestive)
- *Mudirr-e-Baul* (Diuretic),
- *Mughalliz-e-Mani* (increase in Semen Viscosity)
- *Qabiz* (constipating),
- *Daf'e-Ishal* (anti-diarrheal),
- *Nafkh-e-Shikam* (flatulence),
- *Ishaal-e-Damwi* (dysentery)
- *bawasir* (piles)
- *Yaraqan* (jaundice),

- *Waja ' al-Mafasil* (joint pain),
- *Kalb-Ghasi* (mad dog bite)
- *Humma* (fever).

#### **Istematat (Therapeutic Uses):** [3, 4, 6, 9, 16]

- *Zof-e-Bah* (sexual debility),
- *Qillat-e-Mani* (oligospermia)
- *Sailanur Reham* (Leucorrhoea)
- *ZeequnNafas* (Dyspnoea),
- *Is-hal* (Dirrhoea)
- *Majun-e-Mocharas*

#### **Traditional prescriptions:** [3, 4, 6, 9, 10]

- *Musli siyah* consumed with sesame oil and sesame seeds helps relieve colds and all kinds of phlegm.
- When taken with hot water, it acts as an appetizing agent.
- It is effective in relieving stomach ache.
- Consuming two and a half grams of *Musli siyah* with cumin seeds helps in treating jaundice.
- Eating Black Musli with a fiberless fig is useful in treating bad breath.
- When taken with an equal amount of fenugreek leaves, it also helps in the treatment of bad breath.
- Consuming it with turmeric is beneficial in cases of rabies (mad dog bite).
- When taken with a pinch of turmeric, it helps relieve fever, chills, and joint pain.
- Consuming it with salt serves as a remedy for toothache.
- When mixed with onion juice, it acts as a remedy for colic pain.
- Consuming it with basil juice helps relieve kidney pain.
- When taken with *nankhawa*, it is beneficial in treating colds.
- Black Musli consumed with sesame is helpful in treating fever.
- When taken with cow's milk, it works as a remedy for colds, rabies, and smallpox.

▪ **Muzirat (Adverse Effects):** *Mehrroeen* (Hot temperament) [4, 6, 9, 12]

▪ **Musleh (Corrective):** *Amla-khushk* (dry *phyllanthus emblica*) [12]

▪ **Badal (Substitute):** *Musli safed* (*Chlorophytum borivilianum*) [12]

▪ **Miqdar Khurak (dose):** 5-7 gm [4, 6]

#### **Mashur Murakkabat (compound Formulations):** [10, 13, 16, 17]

- *Majun-e-Muqawwi-e-reham*
- *Majun-e-Musli*
- *sufuof-e-sailnur reham*
- *Majun-e-Piyaz*
- *Halwa-barae-jiryān*
- *Hub-e-Asgand*

**Chemical Compositions:** Mucilage, Phenolic, Glycoside, Saponins, Aliphatic compounds [1, 2, 5, 16]

#### **Physico chemical Analysis** [16]

Ash values	
Total ash	5.62
Acid insoluble	0.68
Water soluble	1.35
Successive Extractive values (%)	
Pet. Ether (60-80°)	1.05
Chloroform	1.36
Acetone	0.91
Ethanol	2.12
Dist. Water	11.02
Solid content	67.78%
LOS on drying at 105 °C	8.30%

#### **Crop Management**

Planting materials can be obtained from research stations or authorized centers. The crop thrives well under shaded conditions and performs best when grown as an intercrop. A moist soil environment is essential for proper tuber formation. Propagation is generally done using rhizomes with crowns, while new propagules may also sprout from leaf tips, particularly during the rainy season. Cultivation is carried out on raised beds of suitable size, with farmyard manure applied at the rate of 20 t/ha. Rhizomes are planted at 10-20 cm spacing, and mulching is done immediately after planting [18].

As the plant grows slowly, two to three rounds of weeding along with earthing up are necessary to minimize weed competition and support rhizome growth. Since rodents are fond of the rhizomes, protective measures are required, and intercropping with *Plumbago rosea* is found effective in managing this issue. Harvesting is done either after 8 months as an annual crop or after 2 years as a biennial. The expected rhizome yield is about 1-2 t/ha. After harvest, rhizomes are washed, sliced, dried, and then marketed [18].

#### **Phytochemistry and Secondary Metabolites:**

The phytochemical investigations of *Curculigo orchoides* have demonstrated a wide array of metabolites. Simple sugars such as glucose, mannose, xylose, and glucuronic acid were first reported from the rootstock [24] (Rao & Beri, 1951). Alongside these, glycosides, polysaccharides (including hemicellulose), starch, resin, tannins, mucilage, fats, and calcium oxalate have been documented. The hexane extract yielded the alkaloid lycorine,  $\beta$ -sitosterol, and the sapogenin yuccagenin, while a flavone glycoside, 5,7-dimethoxy glucopyranoside, was also identified [24] (Rao & Beri, 1951).

Fatty acid profiling of the root oil revealed the presence of palmitic, oleic, linolenic, linoleic, arachidic, and behenic acids (Mehta *et al.*, 1980) [25]. A major phenolic glycoside, curculigoside, was isolated and its structure elucidated (Kubo *et al.*, 1983) [26]; later, a quantitative HPLC method for curculigoside estimation was developed (Yamasaki *et al.*, 1994) [27]. Further studies isolated aliphatic hydroxy ketones such as 27-hydroxytricontan-6-one and 23-hydroxytricontan-2-one, together with 21-hydroxytetracontan-20-one and 4-methylheptadecanoic acid (Misra *et al.*, 1984a, b) [28].

Novel compounds including N-acetyl-N-hydroxy-2-carbamic acid methyl ester, 3-acetyl-5-carbomethoxy-2H-3, 4, 5, 6-tetrahydro-1,2,3,5,6-oxatetrazine, and N,N,N',N'-tetramethyl succinamide have also been reported (Porwal *et al.*, 1988) [29]. Other metabolites include orchioside and hentriacontanol (Garg *et al.*, 1989) [30], 25-dihydroxy-33-methylpentatricontanone, the triterpene alcohol curculigol

(Misra *et al.*, 1990) [31], a pentacyclic triterpene (31-methyl-3-oxo-20-ursen-28-oic acid), and several cycloartane-type triterpenes (Xu & Xu, 1992; Xu *et al.*, 1992a, b) [32, 33, 34]. Triterpene glycosides have been classified as curculigo saponins A-M.

Additionally, 5, 7-dimethoxy myricetin 3-O-L-xylopyranosyl-4-O-β-D-glycopyranoside has been detected, along with free sugars, mucilage, hemicellulose, β-sitosterol, crystalline saponins, and alkaloids in chloroform extracts (Misra *et al.*, 1990) [31]. Collectively, these findings highlight the chemical diversity of *C. orchioides*, supporting its pharmacological significance [18].

### Pharmacological Activities of *Curculigo orchioides*

*Curculigo orchioides* Gaertn. (Family Hypoxidaceae), commonly known as Kali Musli, has been extensively studied in both experimental and clinical research. The plant demonstrates a broad spectrum of pharmacological activities attributed to its rich content of bioactive compounds such as curculigosides, saponins, alkaloids, flavonoids, and glycosides [36-38]. The major pharmacological effects are summarized below [35].

#### • Immunomodulatory Activity

Several studies have validated the immunomodulatory potential of *C. orchioides*. Administration of its extracts was reported to significantly stimulate both humoral and cell-mediated immune responses. Enhancement of antibody production and modulation of delayed-type hypersensitivity reactions were observed in experimental models [39-41]. This activity is attributed to polysaccharides and phenolic glycosides present in the rhizomes, which activate macrophages and lymphocytes, thereby improving host defense mechanisms [35, 42, 43].

#### • Antioxidant Activity

The rhizome and root extracts have demonstrated potent antioxidant properties. Both *in vitro* and *in vivo* experiments reported that methanolic extracts significantly scavenged free radicals such as DPPH, superoxide, and hydroxyl radicals [44, 45]. The antioxidant effects are largely due to the presence of phenolic compounds including curculigoside and flavonoids, which help in reducing lipid peroxidation and improving endogenous antioxidant enzyme activity [46-48]. Such properties suggest its role in mitigating oxidative stress-related disorders [35, 49].

#### • Anti-inflammatory and Anti-arthritis Activity

Curculigoside A, a major phenolic glycoside, exhibits strong anti-inflammatory activity. It was shown to suppress pro-inflammatory mediators such as TNF-α, IL-1β, and COX-2 by downregulating NF-κB and JAK/STAT signaling pathways [50, 51, 52]. In animal models of arthritis, *C. orchioides* extracts alleviated joint swelling, reduced inflammatory cell infiltration, and improved mobility [53, 54]. Topical formulations such as hydrogels containing plant extracts also showed significant protective and healing effects against inflammation [35, 5].

#### • Antidiabetic and Anti-obesity Activity

Extracts of *C. orchioides* demonstrated hypoglycemic effects in diabetic animal models by lowering fasting blood glucose and improving insulin sensitivity [56, 57]. The mechanism involves modulation of carbohydrate-metabolizing enzymes

and enhancement of pancreatic β-cell activity [58]. Additionally, its saponin-rich fractions displayed anti-obesity properties through inhibition of lipid accumulation and regulation of adipokines [35, 59].

#### • Aphrodisiac and Reproductive health activity

One of the most widely recognized uses of *C. orchioides* is in enhancing male reproductive performance. Experimental studies revealed significant improvement in mounting frequency, penile reflexes, and sperm count in rodents treated with the rhizome extracts [60-63]. Steroidal saponins and curculigosides are considered responsible for androgenic and spermatogenic effects [64]. Clinical trials further validated its role in the management of sexual dysfunctions, including erectile dysfunction and premature ejaculation [65, 66]. In female models, extracts improved ovarian histology and regulated hormonal balance, suggesting potential benefits in infertility and menopausal symptoms [35, 67, 68].

#### • Anticancer Activity

Preclinical studies indicate anticancer potential of *C. orchioides*. Its bioactive fractions were found to inhibit proliferation of human cancer cell lines, induce apoptosis, and suppress angiogenesis [69, 70]. The cytotoxic effects are believed to be mediated by flavonoids and saponins that trigger caspase activation and mitochondrial dysfunction [71]. These findings suggest that *C. orchioides* may serve as a source for developing novel anticancer agents [35, 71].

#### • Hepatoprotective and Nephroprotective Activity

The rhizome extracts demonstrated hepatoprotective effects against CCl<sub>4</sub> and paracetamol-induced liver damage in rats, evident by restoration of serum marker enzymes and histopathological features [73-75]. Similarly, nephroprotective activity was reported, with significant reduction in oxidative stress markers and improvement of renal function [35, 76, 77].

#### • Antimicrobial and Antiviral Activity

Both crude extracts and isolated compounds of *C. orchioides* have been reported to inhibit the growth of Gram-positive and Gram-negative bacteria, as well as certain fungal strains [78-81]. Some studies also suggested antiviral potential through inhibition of viral replication and enhancement of host immunity [82, 83].

#### • Adaptogenic and Anti-stress Activity

Adaptogenic effects of *C. orchioides* were demonstrated by improved physical endurance, reduced fatigue, and normalization of stress-induced biochemical alterations in animal models [84, 85]. This supports its traditional use as a rejuvenative tonic in Ayurveda and Unani medicine [86].

#### • Neuroprotective and Cognitive-enhancing Activity

Curculigoside and related compounds exert neuroprotective actions by preventing neuronal damage induced by oxidative stress and excitotoxicity [87]. Extracts improved learning and memory performance in experimental models of dementia, possibly through cholinesterase inhibition and upregulation of neurotrophic factors [88, 89]. This suggests its therapeutic relevance in neurodegenerative disorders such as Alzheimer's disease [90].

### • Other Reported Activities

Additional pharmacological studies revealed antiosteoporotic [91] and wound-healing activities [92], broadening the therapeutic potential of this medicinal plant [35].

### Quality disparities in market-derived samples

A study on the quality variations of *Curculigo orchoides* crude drug samples was undertaken at AMPRS, Odakkali, using market samples collected from four districts of Kerala. The analysis revealed significant variability in the quality parameters of the crude drug (Table 1). Market samples often originate from different geographical regions,

resulting in admixtures with adulterants or allied species, variations in the stage of maturity, and differences in soil and climatic conditions. In addition, post-harvest factors such as storage and handling further contribute to inconsistency. Another factor influencing quality is the collection of non-descript plant materials from the wild, which compromises uniformity. This variability emphasizes the need to establish standards at the raw drug stage to ensure consistency in the final product. Furthermore, it highlights the necessity of cultivating medicinal plants such as *C. orchoides* in order to guarantee the supply of uniform, high-quality raw materials to the market [18].

**Table 1:** Proximate composition of *Curculigo orchoides* crude drug samples from different districts of Kerala

Place of Collection	Ash (%)	Protein (%)	Starch (%)	Fibre (%)	N(%)	P (%)	K (%)	Ca (%)
Kottayam	2.92	4.90	15.17	19.97	0.784	0.101	0.479	1.521
Muvattupuzha	5.02	4.94	34.08	20.33	0.790	0.110	0.838	1.227
Ernakulam	4.90	4.73	17.41	22.08	0.756	0.076	0.903	1.668
Thrissur	3.93	5.36	23.49	23.62	0.857	0.180	0.725	1.129

### Modern vs Unani

Modern medicine and Unani medicine both recognize *Curculigo orchoides* (Musli Siyah) as a valuable agent in treating male reproductive disorders, but they explain its effects in different ways. Modern pharmacological research shows that *Curculigo orchoides* has antioxidant, androgenic, adaptogenic and aphrodisiac properties. Studies demonstrate its ability to reduce oxidative stress, regulate the hypothalamic-pituitary-gonadal (HPG) axis, enhance testosterone secretion, and improve spermatogenesis, sperm motility and overall sexual performance. In Unani medicine, Musli Siyah is regarded as a potent Muqawwi-e-Bah (sexual tonic) and Muqawwi-e-Aaza-e-Raesa (strengtheners of vital organs). It is believed to restore balance of mizāj (temperament) and strengthen Quwwat-e-Tanasuliya (reproductive faculty), particularly when weakness arises from excessive heat, dryness, or loss of bodily moisture.

The two systems converge on practical outcomes: both describe its role in improving fertility, vitality, and general stamina. Modern medicine interprets this as correction of hormonal imbalance and reduction of free radical damage, while Unani interprets it as reducing excess dryness/heat and nourishing the reproductive power. Traditional formulations often use Musli Siyah in milk-based preparations, tonics, and compound medicines, which aligns with modern findings that it improves energy metabolism and acts as an adaptogen. Thus, while modern science explains its bioactive phytoconstituents (glycosides, saponins, flavonoids, alkaloids) and clinical outcomes, Unani explains the same benefits through temperament and faculty-strengthening concepts-showing that the two systems complement each other in understanding and utilizing Musli Siyah.

### Results and Discussion

The review of existing literature on *Musli siyah* (*Curculigo orchoides* Gaertn). Demonstrates significant pharmacological potential, validated through both modern scientific investigations and traditional Unani texts. Modern studies have identified a wide range of bioactive constituents such as glycosides, flavonoids, saponins, and curculigosides, which exhibit diverse therapeutic activities including antioxidant, immunomodulatory, anti-

inflammatory, anti-arthritis, adaptogenic, hepatoprotective, neuroprotective, aphrodisiac, and antidiabetic effects. Experimental pharmacological studies in animals, *in vitro* assays, and limited clinical trials corroborate these properties, particularly highlighting its role in improving reproductive health, enhancing immunity, and protecting against oxidative stress-related disorders.

From the Unani perspective, *Musli siyah* (Kali Musli) has been described in classical compendia as a tonic (*Muqawwi*), rejuvenator (*Mufarrih*), and aphrodisiac (*Muqawwi-e-Bah*). Its traditional applications include the management of general debility, infertility, nervous disorders, and inflammatory conditions. The concepts of *Tanqiya-e-Mawad* (elimination of morbid matter) and *Ta'dil-e-Mizaj* (restoration of humoral balance) underpin its therapeutic use in Unani medicine, which shows concordance with modern pharmacological findings on its immunomodulatory, adaptogenic, and anti-inflammatory properties.

Thus, integration of Unani literature with contemporary research provides a holistic understanding of *C. orchoides* as a multipotent medicinal plant.

### Conflict of Interest

Not available

### Financial Support

Not available

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