

Therapeutic Potential, Phytochemical Landscape and Pharmacological Validation of *Maveez munaqqa* (*Vitis vinifera* L.): Bridging Classical Unani Medicine and Modern Pharmacotherapy

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Abstract

Review Article

Maveez Munaqqa, the dried mature fruit of *Vitis vinifera* L. (Vitaceae), represents an indispensable cornerstone of Greco-Arab (Unani) pharmacotherapy. Classically characterized as warm and moist in temperament, it is routinely prescribed to clear viscid humours, tonify vital organs, enrich blood volume and relieve chronic pulmonary and gastrointestinal distress. Despite centuries of experiential clinical success, an updated, systematic synthesis harmonizing classical Unani indications with contemporary chemical and pharmacological findings is required. This review provides an exhaustive appraisal of *V. vinifera*, integrating botanical taxonomy, macroscopic and microscopic authentication, classical Unani temperament and therapeutics, physicochemical standards, phytochemical distribution, and contemporary pharmacological models. Pharmacological screenings corroborate classical claims, evidencing free-radical scavenging, membrane-stabilizing hepatoprotection, broad-spectrum antibacterial activity, lipid profile modulation, anti-obesity effects, airway reactivity suppression in bronchial asthma, down-regulation of pro-inflammatory cytokines, glycemic regulation, antispasmodic action and antipyretic. Rigorous physicochemical standardization parameters ensure reproducibility and protect against adulteration. By establishing direct mechanistic links between classical humoral concepts and biomolecular pathways, this review lays the ground for standardized pharmaceutical translation and well-controlled clinical evaluations.

Keywords: *Maveez Munaqqa*; *Vitis vinifera*; Vitaceae; Unani medicine; Pharmacological evaluation.

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1. INTRODUCTION AND HISTORICAL IMPORTANCE

Vitis vinifera L., belonging to the family Vitaceae is recognized as one of the oldest cultivated woody fruit crops in human history [1]. The dried fruit, known in classical Unani literature as *Maveez*, *Munaqqa*, or *Zabeeb* and commonly referred to as raisins, has accompanied human civilizations across millennia as both a concentrated nutritional resource and a potent medicinal agent [1, 2].

Historical and biblical records highlight the widespread reliance on dried grapes; Scripture references their consumption during the Mosaic era (Numbers 6:3), while archaeological findings trace their deliberate viticultural production back to 2000 BCE in Egypt and

ancient Persia [3]. In Hebrew chronicles, David was offered provisions including "a hundred clusters of raisins" (1 Samuel 25:18) between 1110 and 1070 BCE [3]. The ancient Greeks and Romans held raisins in high esteem, using them as valuable prizes in athletic contests, decorative embellishments in places of worship and staple sustenance for military campaigns [3].

Within traditional Greco-Arab (Unani) medicine, luminaries such as Ibn al-Baitar, Ibn Sina, and Zakariya Razi recognized *Maveez Munaqqa* as a premier therapeutic agent capable of sustaining the innate heat (*Hararat-e-Ghariziyya*), ripening morbid viscous humours (*Inzaj-e-Khilt*) and providing cellular nourishment to depleted tissues [4, 5].

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2. Botanical Taxonomy and Vernacular Names

2.1. Taxonomic Hierarchy

According to standard taxonomic databases, the systematic classification of *Vitis vinifera* is structured as follows [1]:

- **Kingdom:** Plantae
- **Subkingdom:** Tracheobionta
- **Superdivision:** Spermatophyta
- **Division:** Magnoliophyta
- **Class:** Magnoliopsida
- **Subclass:** Rosidae
- **Order:** Vitales
- **Family:** Vitaceae
- **Genus:** *Vitis* L.
- **Species:** *Vitis vinifera* L.

2.2. Vernacular Nomenclature

Reflecting its widespread global cultivation and therapeutic adoption, the plant is designated by distinct vernacular names across linguistic regions [2-6]:

- **Arabic:** *Zabeeb*, *Zabeeb-ul-Jabal* [2, 7]
- **Persian:** *Maveezak-e-Kohi* [2, 7]
- **Urdu / Unani:** *Munaqqa*, *Kishmish*, *Astaiifeus*, *Qalandoos* [4, 5]
- **Hindi:** *Kishmish*, *Angur*, *Manka Daakh* [4]
- **Sanskrit:** *Draksha*, *Dakha*, *Mridirka* [2, 7]
- **Bengali:** *Maneka*, *Drakshya* [2, 7]
- **Tamil:** *Draksha Kottai*, *Drakshai* [2, 7]
- **Telugu:** *Drakshai*, *Kottai Drakshai*, *Drakhsha-pondu* [2, 7]
- **Malayalam:** *Munthringya*, *Mundiri* [6]
- **Kannada:** *Angoor* [2, 7]
- **Marathi:** *Draksha*, *Angur* [2, 7]
- **Gujarati:** *Mudraka*, *Drakshi* [2, 7]
- **Oriya:** *Drakya*, *Gostoni* [2, 7]
- **Punjabi:** *Munaca* [2, 7]
- **English:** Raisins, Dried Grapes [2, 7]

3. The Family Vitaceae: Genera and Distribution

The family Vitaceae comprises a distinct lineage of 16 extant genera and approximately 950 recognized species, predominantly composed of woody climbers spread across tropical, subtropical and temperate climates [8]. Recent molecular and phylogenetic reassessments recognize the following 16 genera: *Acareosperma* (1 sp.), *Afrocyratia* (7 spp.), *Ampelocissus* (115 spp., including species formerly in *Pterisanthes* and *Nothocissus*), *Ampelopsis* (18 spp.), *Causonis* (30 spp.), *Cayratia* (25 spp.), *Cissus* (300 spp.), *Clematicissus* (6 spp.), *Cyphostemma* (200 spp.), *Nekemias* (9 spp.), *Parthenocissus* (14 spp.), *Pseudocayratia* (5 spp.), *Rhoicissus* (14 spp.), *Tetrastigma* (100 spp.), *Vitis* (75 spp.) and *Yua* (2 spp.) [8]. Among these, *Causonis*, *Afrocyratia* and *Pseudocayratia* represent segregated lineages split from the genus *Cayratia* [8].

4. Botanical Description, Habit, and Habitat

Vitis vinifera is a vigorous, deciduous perennial woody climber that anchors and ascends using bifid, leaf-opposed tendrils [9]. The leaves are alternate, suborbicular to cordate, palmately 3- to 5-lobed, margin-dentate and covered on the abaxial surface with an abundant, grey deciduous tomentum [9]. Pentamerous, green, actinomorphic flowers are borne in large, pyramidal compound panicles composed of umbel-like cymes. Flowering typically occurs between April and May, followed by fruiting during June and July. The resulting berries are subglobose to ellipsoid, pulpy and contain 1 to 5 seeds [9].

Geographically, *V. vinifera* is indigenous to Western Asia and the Mediterranean basin, but it is now widely cultivated throughout the world [9]. In India, major commercial cultivation spans Punjab, Rajasthan, Delhi, Uttar Pradesh, Maharashtra, Karnataka, Andhra Pradesh and Tamil Nadu [9, 10].

5. Pharmacognosy and Morphological Characterization (*Mahiyat*)

5.1. Macroscopic Characteristics

The dried commercial drug (*Munaqqa*) consists of shriveled, sticky, pulpy berries measuring 1.5–2.5 cm in length and 0.5–1.5 cm in width [2]. The external surface is dark brown to blackish, irregularly wrinkled with longitudinal furrows and ridges [2]. Each berry contains 1 to 4 pyriform, ovoid or subtriangular seeds measuring 4–7 mm in length, which are hard and brownish-black [2]. The fruit possesses a characteristic pleasant, fruity odor and an intensely sweet, mucilaginous taste [2].

5.2. Microscopic Characteristics

Microscopic evaluation of a cross-section through the fruit reveals a single-layered epicarp composed of tabular epidermal cells containing reddish-brown pigment deposits [2]. The broad, collapsed mesocarp is made up of thin-walled parenchymatous cells loaded with concentrated sugars, occasional fibrovascular strands and abundant prismatic calcium oxalate crystals measuring 13.75–41.0 µm in diameter [2]. The seed exhibits a stony testa formed of yellowish, thick-walled sclerenchymatous cells, while the endosperm consists of angular parenchyma containing fixed oil globules and clustered rosette crystals of calcium oxalate (11–16 µm in diameter) [2].

5.3. Well-Known Cultivars and Varieties

Numerous horticultural varieties of *V. vinifera* have been identified and utilized across traditional practice [11]:

1. *Bhokri* (or *Abi*): High-yield commercial variety.
2. *Kali* (or *Hafshi*): Elongated, fleshy black grape featuring two distinct strains.
3. *Abai*: Large, spherical, watery white grape.
4. *Phakdi*: Small, globose, moderately fleshy white grape.

5. *Sahebi* (or *Kerni*): Elongated, sweet white grape, further divided into *Pandhri-sahebi* and *Kali-sahebi*.
6. *Bedana*: Small, round, sweet seedless white grape.
7. *Sultani* (*Royal*): Large, slightly bitter white grape of spherical habit.
8. *Sakhri*: Small, rounded, intensely sweet white grape.
9. *Pandhari*: Small, globose berry displaying a rich, deep sweet flavor.
10. *Gosai*: Common regional table grape.
11. *Gulabi*: Pinkish-purple, small, spherical seeded berries with a delicate floral aroma.
12. *Karawandi* (*Black Prince*): Spherical, dark blackish-purple berries covered with a dense waxy bloom.
13. *Neelum*: Commercial fruiting selection.
14. *Kandhari*: Seedless selection characterized by very high natural invert sugars (glucose, fructose), exceptionally low sodium and complete absence of cholesterol.

6. Unani Materia Medica Perspective

6.1. Parts Used (*Hissa-e-Mustamila*)

The primary medicinal entity is the ripe, partly dried fruit (*Maveez Munaqqa* / raisins) [9, 11]. In addition, fresh ripe and unripe fruits, unfermented fruit juice, leaves, stem sap and the alkaline ash of burnt grapevine wood and seeds are employed for specific therapeutic purposes [9, 11, 12]. The fruit's outer skin is typically avoided in certain digestive complaints due to its heavy nature, while the seeds provide cold, astringent properties capable of firming lax tissues and soothing inflammatory swelling when applied as a fine ash or paste [12].

6.2. Mizaj (Temperament)

- Hot 1° and Wet 1° (*Har 1° & Ratab 1°*): The consensus temperament assigned by classical Unani authorities for mature, sweet, succulent dried raisins (*Munaqqa*) [13].
- Cold 1° and Dry 2° (*Sard 1° & Khusk 2°*): Recorded in alternative classical texts for sour, partially dried or unripe variants [14].

6.3. Primary Action (*Nafa-e-Khas*)

The drug is distinguished in classical practice by several primary therapeutic actions [13, 15]:

- *Muwallid-i-Khūn* (Haematinic / Stimulator of healthy blood formation) [13]
- *Kathīr al-Ghidhā'* (Dense, bioavailable nutritive agent)
- *Musammin-e-Badan* (Promoter of healthy flesh and body weight / anti-cachectic).
- *Muqawwī-i-Bāh Wa Qalb* (Aphrodisiac and Cardiotonic tonic).
- Remediation of *Amrād Balghamiyya* (Chronic phlegmatic ailments).

6.4. Classical Actions (*Af'āl*)

Classical Unani compendia ascribe an extensive range of physiological actions to *Maveez Munaqqa* [14-17]:

- **Nutritional and Exhilarant:** *Mughzi* (Nutritive), *Mufarreh* (Exhilarant / nervous tonic), *Muqawwi-e-Qalb* (Cardiotonic), *Muqawwi-e-Bah* (Aphrodisiac) [14, 15].
- **Gastrointestinal and Visceral Support:** *Mulayyan* (Mild laxative / aperient), *Muqawwi-e-Ama*, *Meda wa Jigar* (Tonic for intestines, stomach and liver), *Mujalliy-e-Meda wa Am'a* (Digestive cleanser), *Mufatteh Sadad* (Deobstruent) [14, 15].
- **Humoural Maturation and Coction:** *Munziji-e-Balgham wa Sawda* (Concoctive of phlegmatic and black bile humours), *Munziji-e-Khilt-e-Ghaleez* (Coctive agent for thick, viscid humours), *Daaf-e-Hiddat-e-Safra wa Balgham* (Alleviator of bile and phlegm acrimony) [14, 15].
- **Haematological and Vascular:** *Musaffi wa Muwallid-e-Dam* (Blood purifier and haematinic) [15, 17].
- **Respiratory:** *Mulattif* (Demulcent), *Munaffis-e-Balgham* (Expectorant), *Daaf-e-Suaal* (Antitussive / throat soothing agent) [14, 15].
- **Resolvent and Antiseptic:** *Muhallil-e-Auraam* (Anti-inflammatory resolvent), *Mundamil-e-Qurooh* (Cicatrizant / wound healing), *Dafe-Oofunat* (Antiseptic / anti-putrefactive), *Musakkin-e-Hararat* (Febrifuge / refrigerant), *Mudir-e-Bawl* (Diuretic), beneficial across *Amraz-e-Kulliyya wa Masana* (Diseases of the kidneys and urinary bladder) [14-16].

6.5. Therapeutic Indications (*Istemalaat*)

In classical and folklore clinical practice, *Maveez Munaqqa* is administered across multiple organ disorders [9, 11, 12, 15]:

- **Systemic and Metabolic:** Internal haemorrhage (*Jiryamuddam*), jaundice (*Yarqan*), gout (*Niqris*), wasting disorders, febrile conditions (*Huma*) and bilious dyspepsia [9, 15].
- **Respiratory Disorders:** Chronic bronchitis (*Warm-e-Shobaturriya Muzmin*), persistent cough, hoarseness of voice and pulmonary consumption [9, 15].
- **Renal and Bladder Pathology:** Dysuria (*Usrul Bawl*), Bright's disease and bladder calculi [9, 15].
- **Neurological and Convulsive Conditions:** Convulsive states (*Tashannuj*), epilepsy (*Sar'a*) and memory impairment (*Nisyan*) [15].
- **Topical and Miscellaneous Applications:** Infantile constipation during teething (treated using strained grape juice), convulsions triggered by severe constipation, oral thrush, contusions (*Raz*), sprains (*Wasa*), furuncles and

toothache [9, 15]. Unripe sour grape juice is employed as an astringent gargle for throat inflammation, while the vine's spring sap is applied topically for chronic skin lesions [8]. Wood and seed ashes combined with vinegar are traditionally applied to bleeding piles, testicular swellings and gum inflammation [9, 11, 12].

6.6. Adverse Reactions (*Muzir*), Correctives (*Musleh*), and Substitutes (*Badal*)

- **Muzir:** Can be heavy on renal excretion and may provoke digestive irritation in individuals with hot, bilious temperaments [14, 18].
- **Musleh:** *Sikanjabeen* (oxymel), *Khashkhash* (*Papaver somniferum* seeds), *Kateera* (*Astragalus gummifer* gum), *Unnab* (*Ziziphus jujuba*), *Amaltas* (*Cassia fistula*) and *Khurfa* (*Portulaca oleracea*) [14].
- **Badal:** *Kishmish* (small seedless raisins), *Anjeer Khushk* (dried figs) and *Rebaas* (*Rheum ribes*) [13, 14].

6.7. Therapeutic Dosage (*Miqdar-e-Khurak*)

- **Dried Fruit:** 9 to 11 berries, ranging up to 105 g in dietary restorative regimens or 5–10 g as crude extract preparations [10, 11].
- **Fresh Leaf Juice:** 10–15 mL [10].
- **Root Decoction / Juice:** 10–12 mL [10].

6.8. Important Classical Formulations (*Mash-hoor Murakkabat*)

The drug features as a core component in several pharmacopoeial polyherbal recipes [14, 18]:

Majoon-e-Zabeeb, *Jawarish-e-Zarishk*, *Majoon-e-Qurtum*, *Majoon-e-Anjeer*, *Sharbat-e-Zoofa Murakkab* [14], *Itreefal Ustukhudoos*, *Halwa Supari Paak*, *Sharbat-e-Mulayyan*, *Majoon-e-Falasfa* [18].

7. Physicochemical Identity, Purity, and Quality Standards

Standardization data laid down by the Central Council for Research in Unani Medicine (CCRUM) ensure batch uniformity, safety and detection of adulteration [19]:

Physicochemical Parameter	Pharmacopoeial Limit
Foreign Matter	Maximum 2.0%
Total Ash	Maximum 3.0%
Acid-Insoluble Ash	Maximum 0.2%
Alcohol-Soluble Extractive	Minimum 25.0%
Water-Soluble Extractive	Minimum 70.0%
Loss on Drying (Moisture Content)	Minimum 15.0%
Reducing Sugars	59.40%
Fat / Fixed Oil	1.21%

7.1. Chromatographic Fingerprint (Thin-Layer Chromatography)

Thin-layer chromatography (TLC) of the alcoholic extract carried out on Silica gel 'G' plates utilizing an n-butanol : acetic acid : water (4:1:5 v/v) mobile phase reveals diagnostic profiles [19]:

- Under 366 nm UV illumination, a fluorescent zone resolves at R_f 0.29 (blue).
- Following exposure to iodine vapor, four distinct yellow spots appear at R_f 0.08, 0.29, 0.69, and 0.85.
- Post-derivatization with a hydro-alcoholic spray followed by heating at 110 °C for 5 minutes yields three distinct violet/black zones at R_f 0.08, 0.29, and 0.98.

8. Phytochemical Matrix across Plant Organs

Phytochemical investigations demonstrate that *Vitis vinifera* synthesizes a diverse range of secondary metabolites throughout its tissues [20-22]:

- **Fruit Pulp:** High concentrations of invert reducing sugars (glucose, fructose), carbohydrates, dietary proteins, free amino acids, fixed lipids, pectin, malic acid, tartaric acid, oxalic acid, tannins, sterols and bio-

minerals (iron, copper, calcium, potassium, phosphorus, sodium, chloride).

- **Pericarp (Skin):** Flavonols (quercetin, kaempferol, rutin, quercetin-3-O-glucoside, quercetin-3-O-glucuronide), anthocyanins, flavan-3-ols, stilbenes (trans-resveratrol) and phenolic acids (gallic, vanillic, caffeic, p-coumaric, ferulic, syringic, caftaric, coumaric, fertaric).
- **Fruit Juice:** Rich in ferulic acid, caftaric acid, coumaric acid, fertaric acid, resveratrol, flavonols, rutin, kaempferol and quercetin glycosides.
- **Seeds:** Concentrated in monomeric and oligomeric proanthocyanidins (procyanidins), catechins, epicatechins, gallic acid, linoleic acid, primaric acid, p-hydroxyphenylacetic acid, resveratrol, anthocyanidins, rutin, myricetin and flavonol glycosides.
- **Leaves:** Hydroxybenzoic acids (quinic, gallic, vanillic, syringic), hydroxycinnamic acids (caftaric, caffeic, fertaric), flavan-3-ols (galocatechin, catechin, procyanidins A1 and B1), flavonol glycosides (quercetin-3-O-glucoside, kaempferol, myricetin), flavones (apigenin-7-O-glucoside, luteolin-7-O-

glucoside), flavanones (taxifolin, naringenin, hesperetin), coumarins (aesculin, fraxin, aesculetin, umbelliferone), condensed tannins and stilbene oligomers.

- **Roots:** Complex stilbenoids including resveratrol, piceatannol, miyabenol C, trans-piceid, cis-piceid, vitisins A and B, vitisinol B, viniferethers A and B, ampelopsin E, hopeaphenol and isohopeaphenol.
- **Stems and Canes:** Syringic acid, chlorogenic acid, protocatechuic acid, ellagic acid, gallocatechin, procyanidins A1, B1, B2, C1, catechin gallate, trans-astringin, trans-resveratrol, trans-resveratrol-2-C-glucoside, vitisins A–C, and ampelopsins A, D and F.

9. Contemporary Pharmacological Evidence

9.1. Antioxidant Activity

Methanol extracts of grape pomace and seeds display potent radical-quenching capacity [23, 24]. In vitro assays demonstrate substantial inhibition of membrane lipid peroxidation, marked hydroxyl radical scavenging and protection of human low-density lipoprotein (LDL) from transition metal-mediated oxidation [23]. In vivo, the extract counteracts cellular oxidative stress and preserves normal hepatic parenchymal architecture in animal models [23].

9.2. Antibacterial Activity

Petroleum ether and hydroalcoholic extracts of grape seeds obtained via Soxhlet extraction demonstrate broad antibacterial activity across pour-plate assays [23]. The extract completely inhibits Gram-positive pathogens (*Bacillus cereus*, *Bacillus coagulans*, *Bacillus subtilis*, *Staphylococcus aureus*) at 850–1000 ppm [23]. Gram-negative bacteria (*Escherichia coli*, *Pseudomonas aeruginosa*) are inhibited at 1250–1500 ppm, reflecting the outer membrane's barrier function [23].

9.3. Hepatoprotective Activity

The protective efficacy of *V. vinifera* leaf extracts was established in carbon tetrachloride (CCl₄)-induced acute hepatotoxicity in rats [25]. The crude ethanolic extract produced marked hepatoprotection at 125 mg/kg [25]. Successive solvent-solvent fractionation demonstrated that the n-butanol fraction at 83 mg/kg provided the highest membrane-stabilizing and antioxidant protection, significantly reducing elevated serum transaminases and hepatic tissue damage [25].

9.4. Antihyperlipidemic Activity

In a Triton X-100-induced hyperlipidemia rat model, treated animals showed marked elevations in total cholesterol (TC), triglycerides (TG), LDL, VLDL and atherogenic index alongside a reduction in HDL [26]. Oral administration of *V. vinifera* fruit juice significantly reduced these elevated lipid parameters in a dose-dependent manner, with the higher dosage restoring normolipidemic levels [26].

9.5. Anti-Obesity Activity

The petroleum ether extract of *Vitis vinifera* leaves (VLPE) was tested against high-fat diet-induced obesity in rats [27]. Administration of VLPE produced a statistically significant reduction in body weight gain and visceral fat accumulation compared with untreated obese control animals [27].

9.6. Anti-Asthmatic Activity

In an ovalbumin-sensitized animal model of bronchial asthma, treatment with *V. vinifera* dried fruit extract restored pulmonary airflow metrics and normalized elevated circulating histamine levels [28]. Histopathological evaluation of lung specimens showed that the extract suppressed peribronchial inflammatory infiltrates and mucosal edema, demonstrating protection comparable to standard dexamethasone [28].

9.7. Anti-Inflammatory Activity

In inflammatory skin diseases, interleukin-8 (IL-8) is released by keratinocytes as a major pro-inflammatory mediator [29]. An aqueous leaf extract of *V. vinifera* (50 µg/mL) significantly inhibited the secretion of IL-8 induced by tumor necrosis factor-alpha (TNF-α) (IC₅₀ 2.60 µg/mL) and lipopolysaccharide (LPS) (IC₅₀ 14.04 µg/mL), confirming its anti-inflammatory properties [29].

9.8. Antidiabetic Activity

The antidiabetic potential of a 95% ethanolic extract of *Vitis vinifera* roots was evaluated in streptozotocin (STZ)-nicotinamide-induced type-2 diabetic rats [30]. Administration at a dose of 500 mg/kg produced a marked lowering of fasting blood glucose levels, preserving pancreatic architecture and demonstrating glycemic control [30].

9.9. Antispasmodic Activity

Leaf and seed extracts of *V. vinifera* exhibit clear muscletropic spasmolytic effects on smooth muscle [31]. Bioassay-guided fractionation identified the isolated compound 1-(3',4'-dihydroxyphenyl)-3-(2'',4'',6''-trihydroxyphenyl)-propan-2-ol from grape seed extract, which significantly reduced the intensity of histamine-induced smooth muscle contractions [31].

9.10. Anti-Acne Activity

Evaluating therapeutic agents against *Cutibacterium acnes* (formerly *Propionibacterium acnes*) demonstrated that grape leaf extract exerts notable antimicrobial suppression [32]. The crude extract showed by MIC₅₀ and MIC₉₀ values of 64 µg/mL against *P. acnes*, establishing its potential as a natural topical antibacterial agent for acne vulgaris [32].

9.11. Antipyretic Activity

The antipyretic efficacy of *V. vinifera* leaf extract was investigated using the brewer's yeast-induced pyrexia bioassay in rodents [33]. Oral administration of the extract at doses of 100, 200 and 400 mg/kg caused a

significant, dose-dependent decrease in rectal temperature starting 22 hours post-injection, with maximal reduction observed at 200 and 400 mg/kg after 23 hours [33].

10. CONCLUSION

Maveez Munaqqa (*Vitis vinifera* L.) serves as a clear bridge between historical humoral therapeutics and contemporary evidence-based phytotherapy. Classical Unani concepts defining the drug as a vitalizer (*Mufarreah*), cardiogenic (*Muqawwi-e-Qalb*), haematinic (*Muwallid-e-Dam*) and concoctive expectorant (*Munziji-e-Balgham*) correlate closely with modern experimental findings. Contemporary scientific evaluations confirm its broad biological spectrum—encompassing potent radical scavenging, broad-spectrum antibacterial activity, hepatoprotection, antihyperlipidemic regulation, anti-obesity and antidiabetic effects, histamine-suppressing anti-asthmatic modulation, antispasmodic efficacy and antipyraxis.

Establishing rigorous pharmacopoeial standardization parameters (including extractive values, ash contents and chromatographic TLC profiles) ensures reproducible batch-to-batch quality of raw commercial materials. While preclinical animal models provide strong mechanistic support for traditional indications, future efforts must prioritize standardized extraction processes, targeted pharmacokinetic profiling and well-designed, randomized human clinical trials to firmly integrate *Maveez Munaqqa* into global mainstream integrative pharmacotherapy.

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