Majoon-e-Baladur in the therapeutic management of *Falij* (paralysis): A review integrating Unani medicine and modern pharmacology

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Abstract

Falij (paralysis) is a debilitating neurological disorder characterized by loss of motor and sensory functions and represents a major global health burden. In Unani medicine, *Falij* is primarily attributed to *Balghami Ghair-Taba'i Madda*, leading to obstruction (*Sudda*) in neural pathways and impairment of *Rooh-e-Muharrik* and *Rooh-e-Hassas*. *Majoon-e-Baladur*, a classical polyherbal formulation, is traditionally used to restore nerve function, purify the brain, reduce inflammation, and enhance neuromuscular activity. This review aims to evaluate the therapeutic management of *Falij* using the classical Unani formulation *Majoon-e-Baladur* by integrating traditional concepts with modern pharmacological evidence. This narrative review analyzed classical Unani texts and contemporary scientific literature retrieved from PubMed, ScienceDirect, and Google Scholar between 2000 and 2025 combining terms such as "*Majoon-e-Baladur*," "*Falij*," "paralysis," and individual herb names. Key ingredients, including *Semecarpus anacardium*, *Withania somnifera*, *Anacyclus pyrethrum*, *Sesamum indicum*, *Zingiber officinale*, *Prunus amygdalus*, and *Crocus sativus*, demonstrated multi-target pharmacological actions. The findings indicate that *Majoon-e-Baladur* possesses neuroprotective, antioxidant, anti-inflammatory, nervine tonic, circulatory enhancing, and immunomodulatory properties. These actions collectively address the underlying pathophysiology of *Falij* as described in Unani medicine. The review concludes that *Majoon-e-Baladur* represents a rational, multi-targeted therapeutic option for paralysis, warranting further experimental and clinical validation.

Keywords: Ethnopharmacology, *Falij*, *Majoon e baladur*, Nervine tonic, Unani Medicine

Introduction

Neurological disorders are among the leading causes of long-term disability worldwide, with paralysis being one of the most debilitating manifestations.[1] Paralysis is clinically defined as a complete (plegia) or partial (paresis) loss of voluntary muscle function resulting from disruption of neural signal transmission between the central nervous system and muscles.[2]

Globally, over 100 million individuals are affected by paralysis-related conditions, primarily due to stroke, spinal cord injury, and neurodegenerative disorders. Annually, about 15 million individuals worldwide experience a stroke; of these, 5 million die, and another 5 million are left with permanent disability.[3] Paralysis is classified into various types, including hemiplegia, paraplegia, quadriplegia, and monoplegia. Common causes include cerebrovascular accidents or strokes,[4] thrombosis, embolism, spinal cord injury (SCI),[5] neurodegenerative disorders, autoimmune diseases such as multiple sclerosis and Guillain–Barré syndrome, traumatic brain injury, peripheral neuropathies, and cerebral palsy.[6]

Clinical manifestations of paralysis encompass loss of motor function, sensory disturbances such as numbness and tingling, chronic neuropathic pain, spasticity or flaccidity, bladder and bowel

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dysfunction, sexual dysfunction, cognitive impairment, psychological distress, cardiovascular instability, respiratory dysfunction, and susceptibility to pressure ulcers. Risk factors include hypertension, diabetes mellitus, dyslipidemia, cardiovascular disease, deep vein thrombosis (DVT), smoking, obesity, advanced age, and a family history of neurological disorders.[7]

Conventional medical management focuses primarily on pharmacological interventions such as antiplatelets, anticoagulants, antihypertensives, statins, muscle relaxants, anticholinergics, neuropathic pain medications, and corticosteroids, as well as surgical procedures, physiotherapy, occupational therapy, speech therapy, psychological counselling, neurorehabilitation, and advanced assistive technologies.[8] Despite advances in modern medicine, current management strategies largely focus on symptom control and functional compensation rather than neural regeneration. Long-term pharmacotherapy is often associated with adverse effects, and rehabilitation outcomes may plateau. These limitations have prompted interest in traditional medical systems such as Unani medicine, which offer holistic and multi-targeted therapeutic approaches.

Materials and Methods

This narrative review was designed to evaluate the therapeutic potential of *Majoon-e-Baladur* in the management of *Falij* by integrating classical Unani literature with modern scientific evidence. Classical Unani texts including *Al-Qanun fi al-Tibb*, *Khaza'in al-Adwiyah*, *Makhzan al-Mufradat wa al-Murakkabat*, and the *National Formulary of Unani Medicine (NFUM), Parts I–V* were reviewed. Electronic databases including PubMed, ScienceDirect, and Google Scholar were systematically searched for literature published between 2000 and 2025 using predefined keywords, such as "paralysis", "*Falij*", "Unani medicine", "*Majoon-e-Baladur*", "*Semecarpus anacardium*". Only peer-reviewed full-text articles relevant to neurological disorders, paralysis, neuroprotection, and ingredients of *Majoon-e-Baladur* were included. Duplicates, non-peer-reviewed sources, reports with unclear methodology, and irrelevant studies were excluded.

Unani medicine perspective of Falij

In Unani medicine, *Falij* refers to paralysis affecting one longitudinal half of the body and is characterized by impairment of *Quwwat-e-Muharrika* and *Quwwat-e-Hassas*. The condition arises from dysfunction of *Rooh-e-Muharrik* and *Rooh-e-Hassas*, primarily due to *Ihtibas-e-Rooh* and *Sue Mizaj*, with dominance of *Barid wa Ratab* temperament.[9]

Classical scholars such as Ibn Sina and Al-Razi attributed *Falij* to obstruction in neural pathways caused by cold, viscous phlegmatic matter (*Balgham*), which interferes with the flow of vital spirits.[10,11,12]

Etiology

Unani literature classifies the causes extensively, with the primary cause is obstruction (*Sudda*):

i. Internal obstruction by morbid matter (*Maddah*): The most frequent reason is the descent of cold, viscous, and thick phlegmatic (*Balghami Akhlath*) matter from the brain into the nerves, obstructing the passageways.
ii. Inflammation (*Waram*): Physical blockage may result from inflammation in the brain or nerves.
iii. Trauma: Leads to damages or compresses the nerves.
iv. Structural problems include vertebral inclination or deviation, which can compress nerves.
v. *Buhran* (Crisis): In acute illnesses such as apoplexy, epilepsy, or high fever, *falij* may follow a crisis in which the body's faculty (*Tabiyat*) directs morbid matter toward the nerves.

Pathophysiology

Falij is fundamentally caused by *Sudda* (obstruction) within the passages of the nerves (*Asab*), cerebral ventricles (*Butoon-e-Dimagh*), and vascular channels (*Sharain wa Auradha*). This obstruction is

predominantly composed of *Ghaleez wa Luzj Balgham* (thick, cold, viscous phlegmatic matter), which arrests the penetration and transmission of *Rooh-e-Muharrik* and *Rooh-e-Hassas*.[9] The dominant pathological temperament is *Barid wa Ratab* (cold and moist), which counteracts *Hararat-e-Ghariziyya*, resulting in neuromuscular weakness, sensory loss, and motor paralysis.

Pathophysiologically, *Falij* represents a multi-level failure within the *Al-Quwa al-Nafsaniyah* (psychic faculties). The primary deficit lies in the *Al-Quwa al-Muharrikah* (motor faculties), but it also involves higher cognitive faculties such as *Al-Quwat al-Wahmiyah* (thought), *Quwat al-Azimah* (decision), and perceptual faculties like *Quwat al-Lams* (tactile sensation), explaining accompanying sensory loss.[13,14] This disruption isolates the motor apparatus from cognitive control, impairing voluntary movement initiation and execution.[15-17] Clinically, this manifests as *Falij-e-Nisfi* (hemiplegia), *Falij-e-Asfal* (paraplegia), and *Falij-e-Laqwa* (facial palsy).[18] Unani management of *Falij* emphasizes *Izala-e-Sabab* (removal of cause), *Tanqia-e-Madda* (evacuation of morbid matter), *Ta'deel-e-Mizaj* (normalization of temperament), and *Taqwiyat-e-A'sab* (strengthening of nerves).[19,20] *Majoon-e-Baladur* is specifically formulated to address these mechanisms through deobstruent, nervine tonic, and neuro-stimulant actions (Figure 1).

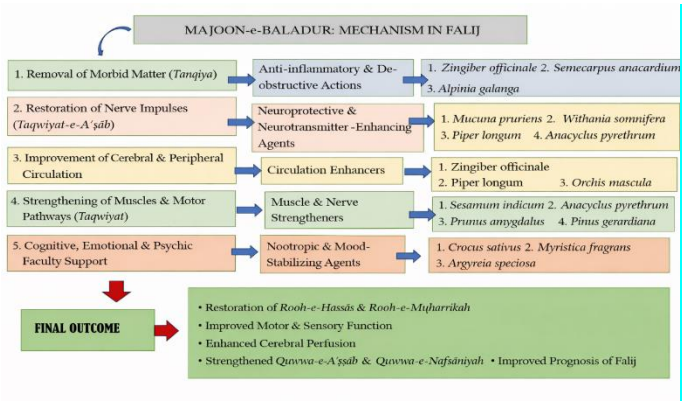

Fig.1: Pathophysiology of *Falij*

Method of preparation of Majoon e Baladur (MB)

Use ingredients of pharmacopeial quality. Clean, dry, and grind ingredients (Table 1, numbers 1 to 4 and 16) separately, then sift through a sieve number 60. Clean, dry, and grind ingredients 5 to 15 and 17 to 19, then sift through a sieve number 80. Take the necessary amount of *Asal* (Honey), boil it over low heat, and strain through muslin cloth; set aside. Dissolve the required amount of sugar in purified water, heat gently to achieve 77-78% consistency (*Qiwam*), and strain through muslin cloth. Combine the strained honey with the prepared *Qiwam,* mix well over low heat, then remove from heat. While still hot, add the powder of ingredient 13 along with 0.1% sodium benzoate and stir thoroughly. Add the coarse powders of ingredients 1 to 4 and 16, mix well, then gradually incorporate the fine powders of ingredients 5 to 15 and 17 to 19, mixing thoroughly to achieve a homogeneous product. Allow the mixture to cool to room temperature. Pack into tightly sealed containers protected from light and moisture.[21]

Therapeutic actions and indications

MB has various effects and uses as shown in (Table 3), mainly in treating neurological disorders.[21]

Dose and administration

MB is administered based on the condition, typically 5-10 g orally with water twice daily after meals.[21]

Results and Discussion

Management of Falij

The findings of this review demonstrates that *Majoon-e-Baladur* employs a multi-targeted therapeutic strategy aligned with the Unani management principles of *Falij*. The phytochemicals identified in Table 2 categorized into alkaloids, flavonoids, phenolics, terpenoids, and sterols exhibit pharmacological properties summarized in Table 3, including antioxidant, anti-inflammatory, neuroprotective, dopaminergic-supporting, and adaptogenic effects. These actions directly correspond to the Unani therapeutic attributes presented in Table 4, such as *Muqawwi-e-A'sab*, *Mufatteh-e-Sudda*, *Muhallil*, and *Munaqqi-e-Dimagh*.

The predominance of hot and dry temperament drugs in the formulation strategically counteracts the cold and moist (*Barid wa Ratab*) imbalance characteristic of *Balghami Falij*. Nutrient rich ingredients such as *Prunus amygdalus* and *Pinus gerardiana* provide

essential lipids and proteins necessary for neuronal membrane repair and myelin regeneration. Collectively, the findings confirm that the main and sub-objectives of the study namely, correlating Unani principles with modern pharmacology and evaluating the therapeutic rationale of *Majoon-e-Baladur* have been successfully achieved.

Table 1: Ingredients of *Majoon e Baladur* [21, 22]

Ingredients/ Tibbi Names	Botanical names	Parts used	Quantity
Kunjad	*Sesamum indicum Linn.*	Seed	30g
Maghz e Tukhm-e Baladur	*Semecarpus anacardium Linn.*	Kernel	30 g
Maghz-e-Badam	*Prunus amygdalus*	Kernel	30 g
Maghz-e-Chilghoza	*Pinus gerardiana Wall.*	Kernel	30 g
Asgand	*Withania somnifera Dunal.*	Root	30g
Aaqarqarha	*Anacyclus pyrethrum DC.*	Root	30 g
Khulanjan	*Alpinia galanga Willd.*	Rhizome	30 g
Bisbasa	*Myristica fragrans Houtt.*	Mace, Aril	30 g
Jauzbuwa	*Myristica fragrans Houtt.*	Kernel	20 g
Zanjabeel	*Zingiber officinale Roxb.*	Rhizome	20 g
Salab Misri	*Orchis mascula Linn.*	Tuber	20 g
Filfil Daraz	*Piper longum Linn.*	Fruit	15 g
Mastagi	*Pistacia lentiscus Linn.*	Resin	15g
Tukhm-e-Halyun	*Asparagus officinalis Linn.*	Seed	15 g
Tukhm-e-Gazar	*Daucus carota Linn.*	Seed	10g
Tukhm-e-Anjara	*Ficus carica Linn.*	Seed	10 g
Tukhm-e-Konch	*Mucuna prurita (L.) Hook.*	Seed	10g
Zafran	*Crocus sativus Linn.*	Style/ Stigma	10g
Samundar Sokh	*Argyreia speciosa Linn.*	Root	5 g
Qand Safaid	*Saccharum officimarum, Linn.*	Crystals	375 g
Asal	*Apis mellifera.Linn*	-	1 Kg

Table 2: Phytochemicals of ingredients of the *Majoon e Baladur*

Scientific Names of Ingredients	Phytochemicals	References
Sesamum indicum Linn.	Phenolics (Lignans, Sesamin, Sesamolin, Sesamol), Phyto Sterols	23,24,48
Semecarpus anacardium Linn.	Flavanoids (Biflavanoids, Amentoflavone Tetrahydroamentoflavone), Phenolics (Bhilwanol, anacardic acid, and semicarpol), Terpenoids, β-Sitosterol, Cardol.	25,26,27
Prunus amygdalus	Flavanoids (Catechin, Epicatechin, Procyanidins, Kaempferol, Quercetin, Isorhamnetin, Naringenin), Polyphenols (Gallic, Caffeic, Ferulic, etc.), sterols, Vitamin E, Anthocyanidins, Cyanogenic glycosides, Triterpenes	28,54
Pinus gerardiana Wall.	Phenolic compounds, Pinolenic acid, Tocopherols	29
Withania somnifera Dunal.	Alkaloids (Withanine, Somniferine, Anaferine, etc.), Terpenes (Withanolides (Withaferin A), Terpenoids), Fatty acids (Stearic, Palmitic, Linoleic acids), Withanic acid.	30
Anacyclus pyrethrum DC.	Alkaloids (Pellitorine, Anacycline, etc), Flavanoids (Quercetin and luteolin,), Phenolics, Tannins, Terpenes (pyrethrin and inulin), Steroids, Isovaleric acid, Phenanthrenes, Saponins	31,32,50,51
Alpinia galanga Willd.	Flavanoids (Quercetin, Galangin, Kaempferol), Phenolics (Phenylpropanoids), Terpenoids, β-Sitosterol, 1′-Acetoxychavicol acetate, Galanols	33,52,76
Myristica fragrans Houtt.	Neolignans, Phenolics, Terpenoids, Sterols (Sitosterol, Campesterol, Desmosterol, Lanosterol), Myristicin, Macelignan, Volatile oils	34,35
Zingiber officinale Roxb.	Phenols (Gingerols, Shogaols, Paradols), Terpenoids, Zingerone	36,55
Orchis mascula Linn.	Alkaloids (Berberine), Phenolics (Tannins, Phenolics), Terpenes, β-Sitosterol, Saponins	37
Piper longum Linn.	Alkaloids (Piperine, Piperlongumine), Essential oils	26,38,58
Pistacia lentiscus Linn.	Tannins, Phenolics, Essential oil (mono- & sesquiterpenes), Triterpenoids, Saponins	39,40,41
Asparagus officinalis Linn.	Alkaloids (Asparagine), Flavanoids (Rutin, Quercetin, Kaempferol glycosides), Steroidal saponins, Tannins, Resin, Vitamin B	42
Daucus carota Linn.	Alkaloids (Pyridine derivatives), Flavanoids (Quercetin, Kaempferol), Phenolics (Coumarins), Terpenoids, Essential oils	43,99

Ficus carica Linn.	Flavanoids (Luteolin, Quercetin), Phenolic acids, Caffeoylquinic acids, β-Sitosterol, Cyanidin-3-rhamnoglucoside, Volatiles	44,62
Mucuna prurita (L.) Hook.	Phenolics (L-DOPA), Unsaturated fatty acids, Protein, Fiber, Saponins, Lecithin	45
Crocus sativus Linn.	Terpenes (Crocin (Crocetin), Picrocrocin, Safranal)	46,63
Argyreia speciosa Linn.	Alkaloids (Ergometrine, Ergoline alkaloids), Flavanoids (Quercetin, Kaempferol), Phenolics (Caffeic acid, Ethyl caffeate), Sterols, Coumarin gylycosides	47,64,65

Table 3: Pharmacological properties of ingredients of *Majoon e Baladur*

Scientific Name	Antioxidant	Anti-inflammatory	Neuroprotective/ CNS effects/ Nervine tonic	Protect Dopaminergic neurons	Astringent	Analgesic/ Musculoskeletal tonic/Muscle relaxant	Cardiovascular effects	Gastro-hepatic/digestive	Cholesterol lowering	Nutritive	Immune modulatory/ Adaptogenic
Sesamum indicum Linn.[23,24]	+	+	+	-	-	+	+	-	+	+	-
Semecarpus anacardium Linn.[25,26,27]	+	+	+	+	-	-	-	-	-	-	+
Prunus amygdalus[28]	+	+	+	-	-	-	+	-	+	-	-
Pinus gerardiana Wall. [29]	-	-	+	-	-	-	-	-	+	+	-
Withania somnifera Dunal.[30]	+	+	+	-	-	+	-	-	-	-	+
(*Anacyclus pyrethrum* L.)[31,32]	+	-	+	-	-	+	+	-	+	-	+
Alpinia galanga[33]	+	+	+	-	-	+	-	-	-	-	+
Myristica fragrans Houtt [34,35]	+	+	+	-	-	+	+	+	+	-	-
Zingiber officinale [36]	+	+	+	-	-	+	+	-	-	-	+
Orchis mascula Linn.[37]	-	-	-	-	-	-	+	-	+	-	-
Piper longum Linn.[26,38]	+	+	+	-	-	+	+	-	+	-	-
Pistacia lentiscus Linn.[39,40,41]	-	-	-	-	+	-	-	+	+	-	-
Asparagus officinalis Linn.[42]	+	+	-	-	-	-	-	-	-	+	+
Daucus carota Linn.[43]	+	-	-	-	-	-	-	+	-	+	-
Ficus carica Linn.[44]	+	+	+	-	-	-	-	-	+	-	-
Mucuna prurita (L.)[45]	-	+	+	-	-	+	-	+	-	-	-
Crocus sativus Linn.[46]	+	+	+	-	-	-	+	-	+	-	-
Argyreia speciosa Linn[47]	+	+	+	-	+	-	-	+	-	-	+

Table: 4 Scientific validation studies carried out on ingredients of *Majoon e Baladur* for treatment of *Falij* and Neurological weakness

Tibbi Name *Mizaj*/ Temperament	*Muqawwi e Az eraeesa* / Viscera tonic, *Muqawwi e Aam*/ General Tonic	*Muqawwi e A' sab*/ Nervine Tonic, *Muharrik* / Stimulant	*Muqawwi e Dimagh*/CNS or Brain tonic	*Mukhrij e Ruthubat wa Balgham*/ Evacuate morbid substances	*Muhallil*/ Anti-inflammatory	*Musakkin*/ Sedative	*Dafe Tashannuj*/Antispasmodic	*Mufatteh*/Deobstruent	*Muqawwi-e- Gurdawa-Masana* /Strengthen the kidneys and bladder	*Musammin e Badam* /weight gain/ Restore Atrophy	Mujaffif/ Desiccant/ emollient	*Mughadhdhi* /Nutritive
Kunjad [21, 48] (Hot1^0 and Cold1^0)	+	-	-	-	+	+	+	+	+	+	-	+
Maghz e Tukhm-e Baladur [25,26] (Hot 3^0 and Dry 3^0)	+	+	+	+	+	-	+	-	-	-	-	-
Asgand [30,49] (Hot 3^0 and Dry 3^0)	+	+	+	-	+	+	-	+	-	-	-	-
Aaqarqarha [50,51] (Hot 3^0 and Dry 3^0)	+	+	+	+	-	-	-	-	-	-	-	-
Kulanjan [33, 52] (Hot^2 and Dry^2)	-	-	-	+	+	+	-	-	-	-	-	-
Maghz e badam [53, 54] (Hot and Moist1^0)	+	+	+	-	-	-	-	-	-	-	+	-
Zanjabeel [36,55] (Hot 3^0 and Dry 2^0)	+	-	+	+	+	-	-	-	-	-	+	-
Jauzbuwa [56] (Hot 2^0 and Dry 3^0) (Hot and Dry 2^0)	+	+	+	+	-	+	-	+	-	+	-	-
Salab misri [57] (Hot and Moist)	+	+	-	-	-	-	-	-	-	-	-	-
Filfil e daraz [38,58] (Hot 2^0 and Dry 2^0), (Hot3^0 and Dry 2^0)	+	+	-	-	+	-	-	+	-	-	-	+
Mastagi [26,59] (Hot2^0 and Dry 2^0)	+	-	-	-	-	-	-	-	-	-	-	+
Maghz-e-Chilghoza[29] (Hot 1^0 and Moist 1^0)	+	-	+	-	-	-	-	-	-	-	-	+
Tukhm-e-Halyun [60] (Hot 2^0 and Moist 2^0)	-	+	+	-	-	-	-	-	-	-	-	+
Tukhm-e-Gazar [43,61] (Hot2^0 and Dry 2^0)	-	-	-	+	-	-	-	+	-	-	+	-
Tukhm-e-Anjara [62] (Hot 1^0 and Moist 2^0) (Hot 2^0 and Moist 1^0)	-	-	-	-	+	-	+	-	-	-	-	+
Tukhm-e Konch [45] (Hot and Dry)	+	+	+	-	-	-	-	-	+	-	+	-
Zafran [46, 63] (Hot 2^0 and Dry 1^0)	+	+	+	-	-	-	+	-	-	-	-	-
Samundar sokh[64,65] (Hot and Dry)	-	+	-	-	+	+	+	-	-	-	+	+

The Unani formulation *Majoon-e-Baladur* has long been prescribed for *Falij* (paralysis) owing to its composite actions such as *Muharrik-e-Aʿṣab* (Nerve stimulant), *Muqawwi-e-Aʿṣab* (Nervine tonic), *Munaqqi-e-Dimagh* (Brain cleanser), *Muqawwi-e-Dimagh* (Brain tonic), *Muhallil* (Anti-inflammatory), *Mussakkin-e-Alam* (Analgesic), *Ḥabis al-Dam* (Anti-hemorrhagic), *Muqawwi-e-Qalb* (Cardioprotective), *Mudir* (Diuretic), *Mufattiḥ-e-Sudad* (Deobstruent), *Mustaḥi* (Appetizer), and *Tanqiya-e-Madda* (Evacuation of morbid matter). The therapeutic relevance of these actions becomes evident when correlated with modern pharmacology, as most constituents of *Majoon-e-Baladur* are now known to possess neuroprotective, antioxidant, anti-inflammatory, circulatory-enhancing, and nervine-regenerative activities. Together, these mechanisms

provide a holistic approach to improving motor and sensory deficits associated with paralysis.

Neuroprotective and Nervine-Tonic Constituents

Semecarpus anacardium (Maghz-e Tukhm-e-Baladur)

Maghz-e-Tukhm-e-Baladur is considered the chief ingredient of *Majoon-e-Baladur*. Its flavonoids and phenolic compounds exert potent antioxidant effects by reducing lipid peroxidation and Thiobarbituric Acid reactive substances (TBARS)[66], lowering protein carbonyl content[67], and elevating glutathione levels.[68] Importantly, *S. anacardium* downregulates caspase-9 and caspase-3, thereby preventing mitochondrial-mediated neuronal apoptosis.[27] In animal models of dopaminergic dysfunction, it delayed motor impairment and enhanced climbing ability[25], supporting its traditional role as a *Muqawwi-e-Aʿṣab*. These mechanistic findings demonstrate strong alignment between classical Unani concepts of strengthening the nerve essence and modern neuropharmacological evidence.

Withania somnifera (Asgand)

Withanolides and somniferine enhance adaptogenic resilience and reduce cortisol-mediated neuronal damage. [69] Its GABA-mimetic action[70] directly relates to the Unani concept of relieving *Sudda* by calming hyperexcitable nerves. Additionally, Withaferin-A suppresses neuroinflammation and modulates immune pathways, offering benefits in autoimmune paralysis such as multiple sclerosis.[30] Its mitochondrial-protective effects further support neuronal survival.[71]

Anacyclus pyrethrum (Aqarqarha)

Aqarqarha's alkylamides (pellitorine, anacycline, affinin) exhibit neuroprotective, pro-cholinergic, and antidepressant effects.[72,73] Its anti-inflammatory and analgesic actions[74] correspond to classical *Muhallil* and *Muskkin* actions. Its pungent volatile oils enhance local circulation[50,51] thereby supporting Unani principles of resolving *Balghami* obstruction. Traditional attributes such as *Munaqqi-e-Dimagh* and *Mushil-e-Balgham* are supported by these findings.[17,50,51]

Alpinia galanga (Kulanjan)

Key bioactive compounds such as ACA and galangin inhibit NF-κB activation, COX-2, and iNOS, reducing TNF-α, IL-1β, and IL-6.[75,76] This anti-inflammatory action protects neurons from secondary injury. *Kulanjan*'s analgesic and sodium-channel modulatory properties,[33] AChE inhibition,[77] and anti-apoptotic effects[78] further support neuromuscular recovery. Its immunostimulant effects strengthen systemic resistance.[79]

Phytochemical-Pharmacological-Therapeutic Integration in *Majoon-e-Baladur*

The comprehensive analysis of *Majoon-e-Baladur* through its phytochemical composition (Table 2), pharmacological properties (Table 3), and traditional Unani therapeutic qualities (Table 4) reveals a sophisticated multi-target therapeutic strategy for managing *Falij*. This integration demonstrates how the formulation's chemical constituents interpret into biological actions that align with classical Unani treatment principles.

Semecarpus anacardium (bhilwanol, anacardic acid) have potent anti-inflammatory and antioxidant properties that protect neural cells from oxidative damage, a major pathogenic mechanism in paralysis via Siddique *et al*. (2019) reported that these compounds reduce lipid peroxidation and downregulate caspase-3 and caspase-9, preventing neuronal apoptosis. This provides molecular validation for its primary role in *Majoon-e-Baladur* as *Muharrik-e-A'sab* (nerve stimulant) and *Muqawwi-e-Dimagh* (brain tonic).

Withania somnifera contains withanine and somniferine alkaloids Amrin Saiyed *et al*., 2016), which Kulkarni *et al*. (2008) showed exert GABA-mimetic actions. This pharmacological evidence substantiates its traditional classification as *Muqawwi-e-Dimagh* (brain tonic) and *Muqawwi-e-A'sab* (nervine tonic) in Unani medicine. For instance, the alkaloids found in *Piper longum* (piperine); Habib, 2024) and Hota *et al*. (2009)

demonstrated to protect neuronal mitochondria by modulating N-Methyl-D-Aspartate (NMDA) receptor mediated excitotoxicity. This aligns with its Unani designation as *Mufatteh* (deobstruent) and *Muqawwi-e-Aza-e-Raeesa* (viscera tonic), supporting its role in removing nervous obstructions.

Alkaloids of *Anacyclus pyrethrum* (pellitorine, anacycline) contribute to their neuroprotective and nervine stimulating properties. According to Afreen Usmani *et al*., (2016), which correlate with its classification as *Muqawwi-e-A'sab* (nervine tonic) and *Muharrik* (stimulant) in Table 4. Fahim *et al*. (2025) documented that these alkylamides exhibit pro-cholinergic and neuroprotective effects, providing scientific validation for its traditional use in nerve strengthening.

Similarly, the rich flavonoids and phenolic chemicals found in *Crocus sativus*, further Abe and Saito (2000), demonstrated that crocin enhances learning behavior and long-term potentiation, while Khalili and Hamzeh (2010) showed neuroprotective effects in Alzheimer's models. These findings validate its Unani classification as *Muqawwi-e-A'sab* and *Muqawwi-e-Aza-e-Raeesa*.

The formulation's chemical diversity enables it to concurrently target multiple pathways associated with brain injury, such as oxidative stress, inflammation, apoptosis, and dysregulation of neurotransmitters.

The traditional Unani therapeutic qualities mentioned in Table 4 exactly match the scientific pharmacological effects noted in Table 3. *Zingiber officinale*, classified as Hot 3^0 and Dry 2^0 in Table 4, contains gingerols and shogaols. Fatima *et al*., (2021) and Grzanna *et al*. (2005) demonstrated that these compounds inhibit cyclooxygenase (COX) and lipoxygenase (LOX) pathways, providing anti-inflammatory effects that scientifically validate its *Muhallil* (anti-inflammatory) action in Unani medicine. Rondanelli *et al*., 2020 stated that main phytochemicals, including gingerols, shogaols, and zingerone alleviate neuropathic and musculoskeletal pain by acting on both peripheral and central pain pathways.

Myristica fragrans has long been used as *Muhallil* (anti-inflammatory agents) due to their anti-inflammatory qualities. *Myristica fragrans* (Hot 2^0 and Dry 3^0) contains myristicin and macelignan. Wahab *et al*., (2009) and Zhang *et al*. (2016) showed that nutmeg oil alleviates chronic inflammatory pain through COX-2 inhibition, while Han *et al.* (2016) documented antiplatelet activity. These findings support its traditional use as *Muqawwi-e-A'sab* and *Mufatteh* (deobstruent).

Ingredients supporting neuro-muscular repair and systemic function

Sesamum indicum (Kunjad)

Sesame enhances GPx, SOD, and catalase, reducing oxidative stress.[80] Udomruk *et al*. (2021) demonstrates that in animal models, sesame oil and sesamin prevent leucocyte migration and paw edema. As a real *Mohallil*, it resolves the swelling and inflammation *(Sudda*) in nerve pathways by significantly lowering neuroinflammation, a major cause of secondary neurological injury in paralysis,[81] Sesame's anti-atherosclerotic and antihypertensive properties of sesamin, reduces the generation of vascular superoxide and enhances endothelial function. It improves circulation by lowering blood pressure and enhancing general cardiovascular health, [82] and muscle-strengthening nutrients [83] support rehabilitation in paralysis. Its analgesic effect comparable to ibuprofen [84] validates its use for neuropathic pain.

Prunus amygdalus (Badam)

Badam suspension significantly decreases serum levels of TC, TAG, LDL-C, and VLDL-C and increases HDL-**C** in experimentally induced hyperlipidemic mice, intensively reduce the risk of stroke [85] Further Ruchi Singh *et a*l (2022) reported that ethanolic and phenolic extracts of badam fruits exhibit remarkable anti oxidant, antiradical activities; this directly protects neural cells from oxidative degradation and offers antioxidant neuroprotection.[28] According to Abdullah *et al* (2017) its oleic acid and phospholipids restore neuronal membranes and myelin, aiding recovery in

demyelinating conditions such as Multiple Sclerosis.[54] This validates its traditional designation as *Musammin-e-Badan* for restoring atrophy in paralysis patients.

Zingiber officinale (Zanjabeel)

Gingerols and shogaols inhibit COX, LOX, and pro-inflammatory cytokines[86] and alleviate neuropathic pain.[87] Its cardioprotective and ACE inhibitory actions[88] improve overall systemic resilience in paralyzed patients.

Myristica fragrans (Jauzbuwa/Bisbasa)

Its anti-inflammatory and antioxidant myrifralignans [89] help reduce secondary injury after hemorrhage. Myristicin and macelignan exert anti-convulsant and neuroprotective effects.[34] Its antiplatelet activity[90] and cardiovascular modulation aid stroke prevention and recovery.

Orchis mascula (Salab Misri)

Salab Misri exhibits vasodilatory, antihypertensive, and anti-dyslipidemic effects,[91,92] contributing to stroke prevention. Its proposed calcium-channel blocking effect may reduce excitotoxic neuronal damage.[37]

Piper longum (Filfil Daraz)

Its bronchodilatory and anti-inflammatory actions prevent respiratory complications in spinal cord injury.[93] Piperine enhances bioavailability and protects neuronal mitochondria by modulating N-Methyl-D-Aspartate receptor complex (NMDA)-mediated excitotoxicity [94] and apoptosis. [95] Its gastrointestinal stimulant effects improve digestion in immobilized patients.

Pistacia lentiscus (Mastagi)

Mastagi's triterpenoids have anti-atherogenic and antioxidant effects via CD36 downregulation and glutathione restoration.[96] Its hepatoprotective[97] and gastroprotective actions[40] are essential for paralyzed patients prone to metabolic and stress-induced complications.

Asparagus officinalis (Tukhm-e-Halyun)

Steroidal saponins and flavonoids offer antioxidant and anti-inflammatory protection, while asparagine's diuretic action reduces CNS edema.[42] B-vitamins support myelin repairs, aligning with its Unani role as *Muqawwi-e-Dimagh*.

Daucus carota (Tukhm-e-Gazar)

Its diuretic, anti-urolithiatic, and antimicrobial actions prevent urinary complications common in immobilized patients.[43,92,99] Its hepatoprotective properties maintain metabolic stability.

Pinus gerardiana (Maghz-e-Chilghoza)

Certain polyunsaturated fatty acids (PUFAs), particularly pinolenic acid, are particularly abundant in chilgoza. Dietary PUFAs are immediately integrated into neuronal membranes, where they improve membrane fluidity, optimize synaptic receptor and ion channel function, and boost neurotransmitter activity, as demonstrated by fundamental studies. The hallmark of a nootropic drug is enhanced cognitive performance, which is caused by this biological action. Additionally, Chilgoza validating its use as a *Muqawwi-e-Dimagh*, that nutritionally heals brain tissue by supplying the vital lipids required to rebuild aging or damaged neuronal membranes.[29]

Ficus carica (Tukhm-e-Anjeer/Anjara)

Ficus carica's anti-platelet activity reduces ADP- and adrenaline-induced platelet aggregation [100], supporting prevention of thrombotic stroke. Its antispasmodic effect improves cerebral perfusion. [101] Additionally, ficin proteases may facilitate hemostasis by activating Factor X in hemorrhagic stroke,[102] showing its dual action in ischemic and hemorrhagic paralysis.

Mucuna pruriens (Tukhm-e-Konch)

Rich in L-DOPA, *Mucuna pruriens* replenishes dopaminergic pathways essential for motor function. [45] In Unani terms, this translates to restoring *Quwwat-e-Aʿṣab* and countering *Balghami* obstruction. *Mucuna pruriens* shows notable symptomic

improvement in cases of depressive illness and decreases anxiety and depression. It also possesses Central Nervous System (CNS) stimulant effect at low doses and CNS depressant effect at higher doses.

Crocus sativus (Zafran)

Crocin improves memory, synaptic plasticity, and potentiation.[103,104] Clinical trials confirm antidepressant efficacy.[105,106] Its anti-inflammatory and analgesic actions,[107] muscle relaxant properties [108] and circulatory enhancement[46] make it ideal for neurorehabilitation.

Argyreia speciosa (Samundar sokh)

Its anticonvulsant,[64] analgesic,[109] and antioxidant effects [65] help manage neuropathic symptoms and oxidative stress associated with paralysis.

The predominance of herbs with hot and dry temperaments in Table 4 (*Semecarpus anacardium*: (Hot 3°and Dry 3°); *Zingiber officinale*: (Hot 3°and Dry 2°) represents a deliberate therapeutic strategy to counteract the cold, moist (*Barid wa Ratab*) temperament imbalance characteristic of *Balghami Falij*. These herbs contain bioactive compounds (volatile oils, alkaloids, terpenoids) that stimulate circulation, warm the nervous system, and facilitate the evacuation of cold, viscous phlegmatic matter (*Tanqia-e-Madda*). The nutritive (*Mughadhdhi*) properties of ingredients like *Prunus amygdalus* and *Pinus gerardiana* provide essential lipids and proteins for neuronal repair and myelin regeneration, addressing the *Daf-e-A'sab* (nerve weakness) component of paralysis.

Conclusion

This review concludes that *Majoon-e-Baladur*, through its synergistic multi-herbal composition, offers a comprehensive therapeutic approach for the management of *Falij*. By addressing *Balghami Ghair-Taba'i Madda*, removing neural obstruction, normalizing temperament, and strengthening nervous function, the formulation aligns classical Unani wisdom with contemporary neuropharmacological mechanisms.

While the available evidence supports its therapeutic potential, further standardized experimental and clinical studies are essential to establish its role as a scientifically validated treatment option for paralysis.

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