

Muqawwiyāt (Tonics): A Classical Concept of Health Preservation and Organ Fortification in Unani Medicine

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ABSTRACT

The concept of tonics has been cornerstone of various systems of traditional medicine, serving as agents that restore vitality, enhance resilience, and promote overall well-being. In modern biomedicine, related concepts are explored under terms such as adaptogens, immunomodulators, and organ-supportive therapies, yet these approaches often remain fragmented and lack the integrative orientation found in traditional systems. Within Unani medicine, *Muqawwiyāt* are deeply embedded in the philosophical foundation that views health as a dynamic balance between temperament, faculties, and structure of body. Unlike modern pharmacotherapy, which targets isolated pathophysiological processes, *Muqawwiyāt* operate within a holistic paradigm that unites prevention, restoration, and rejuvenation. This review explores the theoretical and functional dimensions of *Muqawwiyāt*. It further draws parallels with analogous concepts of tonics across other traditional healing systems, including Ayurveda and Traditional Chinese Medicine, to provide a comparative understanding. By examining both classical interpretations and potential mechanistic insights such as modulation of metabolism, enhancement of cellular energy, and regulation of stress responses this review aims to bridge traditional Unani wisdom with contemporary scientific perspectives. Ultimately, it underscores the enduring significance of *Muqawwiyāt* as a comprehensive therapeutic paradigm that unites traditional principles of health preservation with contemporary concepts of physiological resilience and adaptive capacity.

Keywords: Adaptogens, Ibn Sina, Temperament, Traditional medicine, Unani Medicine.

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INTRODUCTION

In Unani medicine, health is defined as a state in which temperament, faculties, and structure of body are in perfect harmony, allowing all functions to be performed correctly. Disease arises when this harmony is disturbed (Itrat, 2020). According to the Unani philosophy, the human body is composed of seven basic principles viz. element, temperament, humours, organ, pneuma, faculties, and functions. The mere absence of any of the components threatens the very existence of life and derangement of which results in disease (Usmani *et al.*, 2021). The bodily functions (*Af'āl*) are the expressions of faculties (*Quwa*), and the two are closely linked. Any abnormality in organ function reflects a defect in its corresponding faculty. These faculties are rooted in the organs themselves. Moreover, for optimal performance, the organ's structure and nourishment from the humors must remain

sound. Functional disturbances may arise due to qualitative defects within an organ, or improper regulation by *Medicatrix Naturae* (*Tātu'at Mudabbira Badan*) (Ahmad *et al.*, 2021).

In classical Unani literature, *Muqawwiyāt* (tonics) are regarded as integral to both therapeutic and preventive care. These formulations are considered safe for prolonged use and are described as agents that fortify internal organs, enhance physiological efficiency, and sustain overall health. Their relevance extends beyond routine healthcare, as they are also emphasized for their protective role during epidemics (Siddiqui and Ayyub, 2025). The concept of tonics (*Muqawwiyāt*) holds a pivotal position in the Unani system of medicine, where they are recommended not only for restoring balance during illness but also for preserving health, enhancing vitality, and preventing disease. In contrast, conventional medicine does not recognize tonics as a distinct therapeutic category; instead, it relies on targeted pharmacological agents, dietary supplements, or rehabilitative interventions to address specific dysfunctions. Although modern biomedical research has advanced in areas such as adaptogens, immunomodulators, and organ-supportive therapies, these remain fragmented approaches and fall short of the integrative, holistic framework central to the Unani concept



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of *Muqawwiyāt*. Given this divergence, there is a critical need to revisit and contextualize the role of tonics within Unani medicine. This review therefore serves as a conceptual overview, aiming to deepen understanding of *Muqawwiyāt* through the lens of Unani thought. This review goes beyond highlighting the functional role of *Muqawwiyāt* by also drawing parallels with analogous concepts in other traditional healing systems. Furthermore, it advances hypothetical mechanistic insights that may serve as a conceptual bridge, laying the groundwork for integrating classical Unani wisdom with contemporary scientific inquiry.

METHODOLOGY

This review was conducted through integrative approach combining classical Unani sources with contemporary literature. The objective was to explore the theoretical foundation, functional classifications, and potential mechanistic insights of *Muqawwiyāt* (tonics) within Unani medicine, and to correlate these with analogous concepts in modern and other traditional systems. Primary data were extracted from authoritative Unani texts including *Al-Qānūn fi Tibb* by Ibn Sīnā, *Kitab ul-Kulliyāt* by Ibn Rushd, *Khazain al-Adviā* by Hk. Najmul Ghani, *Bustān al-Mufradāt* by Mohammad Abdul Hakim, and *Makhzan al-Mufradāt* by Hk. Mohammad Kabiruddin. A systematic search was conducted across databases including PubMed, Scopus, ScienceDirect, and Google Scholar, ResearchGate for publications from 2000-2025 using the keywords: Unani tonics, *Muqawwiyāt*, adaptogens, immunomodulators, organ-specific tonics, and Rasayana. Extracted data were thematically arranged to facilitate a translational understanding of *Muqawwiyāt*, bridging historical wisdom with contemporary scientific paradigms.

DISCUSSION

Different descriptions and definitions of *Muqawwiyāt* Khās

In *Al-Qānūn*, Ibn Sīnā describes tonic “as a drug which moderates the disposition and temperament of an organ to an extent so that it resists the superfluous matter and disorders moving towards it” (Table 1). This action is elicited either by its inherent property or by its moderate temperament which cools what is warm and warms what is cold (Sina, 1998; Sina, 2010). In this context, “disposition” refers to the inherent functional state of an organ, whereas “temperament” denotes its qualitative characteristics, typically described in terms of hot, cold, moist, or dry. The ability of a drug to moderate an organ’s state can occur through two primary mechanisms. First, it may act via its inherent properties, which are intrinsic qualities that directly influence the organ’s function e.g., a substance with cooling properties can counterbalance excessive heat, thereby restoring equilibrium. Second, the drug may operate through a moderate temperament, possessing a balanced nature that enables it to adjust extremes i.e., cooling what is overly warm or warming what is excessively cold.

By modulating disposition and temperament in this manner, the drug reinforces the organ’s functional integrity, enhances its adaptive capacity, ultimately supporting resilience and reducing susceptibility to functional disturbances and disease.

Ibn Rushd in his book “*Kitab ul-Kulliyat*”, mentions ‘the temperament (*Mizāj*) of tonics, in their essential nature, bears a resemblance to the temperament of the organ they act upon. However, by virtue of being tonics, they are generally somewhat warmer and drier than the organ itself. This is because most organs particularly *Aza Fa’ila* tend, over time, to develop laxity (*Istirkha*) and debility (*Zu’f*) due to the predominance of coldness and moisture. The medicinal temperament, being of opposite quality, counteracts this tendency, thereby restoring strength and function (Rushd, 1987).

Functional role of *Muqawwiyāt*

The author of *Khazain al-Adviā*, Hk. Najmul Ghani states that, the use of *Muqawwiyāt* (tonic) is aimed at restoring vitality and strength to the entire body, particularly in states of debility and weakness. The effects of *Muqawwiyāt* (tonics) are gradual yet long-lasting, promoting sustained health benefits. Their initial action involves the correction of gastric function, leading to improved appetite, enhanced digestion, and effective assimilation of ingested food. This, in turn, enriches the blood with vital nutrients, facilitates absorption, and ensures the proper distribution of essential elements throughout the body. As a result, natural bodily fluids regain balance, the temperament of organs is maintained, and structural integrity is preserved, collectively supporting optimal physiological function and resilience (Ghani, 2010).

Hakīm A ‘zam Khan, in his book *Muhīt Azam*, mentions that tonics (*Muqawwiyāt*) function by regulating/restoring the structure of an organ and preserving its innate temperament (*Mizāj*). They also prevent the trickling and accumulation of waste materials toward the organ, thereby protecting it from dysfunction. Quoting *Gilani*, he states that the concept of strengthening (*Taqwiyat*) can be understood in multiple ways.

One form of strengthening (*Taqwiyat*) occurs when a tonic fortifies all the active faculties of the body responsible for all the bodily movements. This type of strengthening, however, is best achieved through true nourishment derived from wholesome foods such as meat and cereals.

Another form of strengthening (*Taqwiyat*) is achieved when tonics (*Muqawwiyāt*) enhance specific faculties of the body, such as the digestive faculty (*Quwa Hazima*), the cognitive or intellectual faculty (*Quwa Mufakkira*), and others. Here strengthening occurs primarily through the action of medicines themselves. In most cases, the efficacy of such medicines depends upon their temperament (*Mizāj*) e.g., as in case of the digestive faculty tonics of a moist and warm temperament are required, while the faculty

of retention (*Quwa Masika*) benefits from medicines possessing a cold and dry temperament.

A third mode of strengthening (*Taqwiyat*) is observed when a tonic fortifies an organ in such a way that it resists the influx of waste materials and prevents the development of disease. For this, it is essential that the temperament (*Mizāj*) of the organ and its structural integrity (*Qiwām*) remain balanced. Therefore, Adjusting the temperament of organ and regulation of its structure is equally important. As for structural integrity *Qiwām* plays a crucial role in determining how the organ receives and interacts with external influences. E.g., When an organ becomes lax and its channels widen, it is more vulnerable to harmful residues. In such cases, astringent medicines, by contracting and toning tissue components, reduce this susceptibility and enhance the organ's resistance to the entry of waste material.

A key consideration in the use of *Muqawwī* agents is their variable efficacy. Not all drugs are universally tonic, as their strengthening effects depend on the individual's constitution and the temperament of drug. As an illustration, camphor (*Kafūr*) provides tonic support for individuals with a warm temperament, while potentially being ineffective or weakening (*Muz'if*) for those with other constitutions (Khan, 2018).

Classification of Muqawwiyāt

In Unani medicine, *Muqawwiyāt* are known to act broadly on the entire body or target specific organs and physiological systems. They can be classified based on their functional effects (*Muqawwī Ām* or *Muqawwī Khās*) or their mechanistic properties, which describe the underlying processes through which they exert their restorative action.

Functional classification

- ***Muqawwī Ām* (General tonics);** They cause improvement of nutritive capacity, enhancement of organ motion, correction of imbalanced temperament, or a combination of these effects providing generalized systemic strengthening (Kabiruddin, 2014).

Muqawwī Khās (Organ-Specific/System specific Tonics)

- *Muqawwiyāt Qalb* (cardio-tonics): A cardiotonic agent that strengthens and invigorates the heart, enhancing its vitality and sustaining its functional integrity.
- *Muqawwiyāt Kabil* (hepato-tonics): A pharmacological agent that fortifies the liver by augmenting its vitality and resilience, while simultaneously refining its delicacy and optimizing its functional efficiency.
- *Muqawwiyāt Dimāgh* (neuro-tonics): A neuro-tonic agent that fortifies the brain, enhancing its vitality and

supporting the preservation of cognitive and sensory functions.

Mechanistic classification

- **Tonics that Strengthen Structural Integrity (*Qiwām*):** These tonics enhance the firmness and stability of organs and tissues, ensuring that the organ can function optimally (Table 2) (Ghani, 2010).
- **Tonics that Restore and Preserve Temperament (*Mizāj*):** Such tonics act to maintain or correct the organ's innate temperament, counterbalancing any deviation caused by disease or weakness.
- **Tonics that Enhance Faculties of the Organ (*Taqwiyat Quwa*):** These tonics strengthen specific faculties of the organ, such as Digestive faculty (*Quwa Hazima*), Cognitive faculty (*Quwa Mufakkira*).

Concept of Muqawwiyāt (Tonic) in other healing systems

Ayurveda

The closest parallel to *Muqawwiyāt* in Ayurveda is the concept of *Rasāyana* (rejuvenation therapy). "*Rasāyana* is a remedy that removes ageing and disease (or: that removes disease caused by ageing) and produces that which supports youthful vigour, aids eyesight, nourishes, and bestows sexual vigour" (Wujastyk, 2017).

Traditional Chinese medicine

In TCM, the concept of "tonifying" or "supplementing" herbs (Bu Yao) is central. These herbs are used to treat deficiency patterns (Xu), such as Qi Deficiency, Blood Deficiency, Yin Deficiency, or Yang Deficiency. The tonification process in TCM is categorized in two main ways: body tonification and organ tonification. Body tonification aims to provide energy and physical strength by correcting imbalances of qi, blood, yin, and yang. Organ tonification focuses on nourishing the internal zang-fu organ systems such as the heart, liver, spleen, lung, and kidney to counteract organ-specific deficiencies (Efferth et al., 2016).

Conventional medicine

The term "tonic" in modern conventional medicine is less defined. In medical dictionary, it is referred to as: "A remedy purported to restore enfeebled function and promote vigor and a sense of well-being; tonics are qualified, according to the organ or system on which they are presumed to act, as cardiac, digestive, hematic, vascular, nerve, uterine, general, etc." (Tonic, 2012).

Table 1: Comparative Table: Modern Definitions vs. Unani Concept of Muqawwiyāt (Götti et al., 2014).

Year and Author	Modern Definitions of Tonic	Correlation with Unani <i>Muqawwiyāt</i> Concept
1934 Starkenstein	"An agent that 'can eliminate a subjective feeling of illness or weakness that is not accompanied by objectively measurable organ malfunctions..."	High Correlation: This aligns directly with the core purpose of <i>Muqawwiyāt</i> , which is to restore vitality and strength, especially in states of weakness and debility. Unani medicine focuses on treating the patient's subjective experience of illness, which is a central theme in this definition.
1984 Teeguarden	"...used to fortify the body-mind, to strengthen the life functions, to encourage natural harmony, to enhance one's adaptability, and as a result of this to generate what the Chinese call "radiant health."	High Correlation: This definition's emphasis on fortifying the body, strengthening life functions, and promoting harmony resonates strongly with the Unani goal of increasing overall vigor and maintaining equilibrium. The idea of "radiant health" is analogous to the complete restoration of vitality described in the Unani concept.
1993 Mowrey	"An agent that 'balances the biochemical and physiological events that comprise body systems. Tonics are bidirectional, capable of both increasing and decreasing the activity of body processes."	Strong Correlation: The concept of "bidirectionality" and balancing physiological events is a key feature of Unani tonics. <i>Muqawwiyāt</i> work to restore temperamental balance (<i>I'tidal al-Mizāj</i>) by correcting extremes moderating cold with warmth and heat with coldness. This homeostatic action is a core principle in both definitions.
1995 Stedman	"A remedy purported to restore enfeebled function and promote vigor and a sense of well-being; qualified, according to the organ or system on which they are presumed to act, as cardiac, digestive, hematic...etc."	High Correlation: This definition almost perfectly mirrors the Unani concept. <i>Muqawwiyāt</i> are used to restore enfeebled function and promote vigor. Furthermore, Unani medicine also classifies tonics based on the specific organ they strengthen, such as tonics for the heart, liver, or brain.
1996 Bergner	"A special food that nourishes, rather than a drug that stimulates. Tonics do not produce the subsequent "crash" that stimulants do."	High Correlation: Unani medicine explicitly distinguishes <i>Muqawwiyāt</i> from stimulants. The effects of a <i>Muqawwī</i> are gradual in onset but long-lasting , unlike the immediate but transient effect of stimulants. The concept of nourishing the body aligns with the Unani mechanism of improving assimilation and enriching the blood to provide optimal nourishment.
2000 Mills, Bone	"A remedy with substantially supportive reputations. Some tonics are also classified as adaptogens, i.e., they appear to encourage the body to better adaptability under stress."	Strong Correlation: This aligns with the Unani view of tonics enhancing the body's inherent strength. The concept of an adaptogen improving adaptability under stress correlates with the protective function of <i>Muqawwiyāt</i> , which generate strength to prevent the absorption of harmful substances and help the body maintain equilibrium.
2001 Alghabban	"An agent used to stimulate the functions of the body or more generally to increase the patient's feeling of well-being."	Partial Correlation: While <i>Muqawwiyāt</i> do stimulate internal organs and increase well-being, the term "stimulate" can be misleading. Unani medicine differentiates tonics from stimulants, as the former nourishes and balances gradually while the latter produces a rapid, often exhausting, effect. So, while the outcome (increased function and well-being) is similar, the mechanism implied by "stimulate" is different from the Unani perspective.

Mechanistic insights

Adaptogenic and Anti-stress Activity Fortifying the Psychic Faculty (Quwa Nafsāniya)

Asgandh (*Withania somnifera*) exemplifies a premier Unani general tonic (*Muqawwī Badan*) and Nervine tonic (*Muqawwī Āsāb*), traditionally indicated for debility, convalescence, and as a rejuvenator and aphrodisiac (Kabiruddin, 2014; Hakim, 2015). Its

primary bioactive compounds, the withanolides (e.g., withaferin A), are known to modulate the Hypothalamic-Pituitary-Adrenal (HPA) axis, exhibiting cortisol-regulating effects by lowering elevated cortisol under chronic stress while supporting adrenal function. This contributes to the maintenance of physiological homeostasis and the strengthening of *Quwa Haywaniyya*. Additionally, its anti-stress properties have been linked to GABA-mimetic activity, further supporting resilience against

Table 2: Examples of various types of Muqawwiyat.

Type	Examples
<i>Muqawwī Dimāgw</i> (Brain tonics)	Āmlā (<i>Embllica officinalis</i>), Ustukhudūs (<i>Lavendula stoechas</i>), Halela (<i>Terminalia chebula</i>), Badām Shīrīn (<i>Prunus amygdalus</i>), Qaranful (<i>Syzigium aromaticum</i>) (Hamdani, 2018; Siddiqui and Ayyub, 2025).
<i>Muqawwī Qalb</i> (Cardio-tonics)	Badranjboya (<i>Mellisa officinalis</i>), Elaichī (<i>Ellataria cardamomum</i>), Jadwār (<i>Delphinium denudatum</i>), Gul-i-surkh (<i>Rosa damascena</i>), Gudhal (<i>Hibiscus rosa-sinensis</i>) (Hamdani, 2018).
<i>Muqawwī Kabid</i> (Hepato-tonics)	Afsantīn (<i>Artemesia absinthium</i>), Kāsni (<i>Chicorium intybus</i>), Kasūs (<i>Cuscuta reflexa</i>), Bārtang (<i>Plantago major</i>), Ghafith (<i>Gentiana olivier</i>), (Hamdani, 2018).

physical and psychological stressors (Porta MD *et al.*, 2023; Murthy *et al.*, 2022).

Mitochondrial Biogenesis and Energy Metabolism: Enhancing the Physical Faculty (*Quwa Tuwalty*)

Salab Misrī (*Orchis mascula*) serves as a classical example of a Unani tonic (*Muqawwī Badan*), renowned also for its role as a sexual tonic (*Muqawī Bāh*), traditionally indicated for general weakness and loss of vitality (Hakim, 2015). Its revitalizing effects are attributed to the presence of mucilage, starches, and other bioactive compounds, which are hypothesized to enhance cellular nutrition and energy metabolism. Preclinical investigations suggest that these constituents may improve mitochondrial function by supporting the efficiency of the electron transport chain and stimulating mitochondrial biogenesis, potentially through upregulation of pathways involving PGC-1α (Hossain, 2011; Jornayvaz and Shulman, 2010). This results in increased ATP production, providing a biochemical basis for its traditional use in combating fatigue and restoring overall vitality.

Immunomodulation: Strengthening the Body's defenses (*Quwa Mudabira badan*)

The use of *Gaozaban* (*Onosma bracteum*) exemplifies the Unani concept of tonics (*Muqawwiyāt*), particularly in enhancing the innate resistance of body (*Quwa Mudabira Badan*). Classical unani texts describe *Gaozaban* as a general tonic with cardioprotective and exhilarating properties, indicated in febrile conditions, meningitis, and respiratory disorders (Hakim, 2015; Kabiruddin, 2014). Modern phytochemical analyses have identified bioactive constituents such as pyrrolizidine alkaloids, flavonoids, and polysaccharides in it, which have been shown in preclinical studies to exert immunomodulatory effects, including stimulation of macrophage phagocytosis and enhancement of lymphocyte proliferation (Rajapara *et al.*, 2021; Hosseinzade *et al.*, 2019; Kiddane and Kim, 2020). These findings provide a

mechanistic rationale for the traditional use of *Gaozaban* in fortifying the body, supporting recovery, and increasing resistance to infections.

CONCLUSION

This review highlights the conceptual depth of *Muqawwiyāt* (tonics) within Unani medicine, emphasizing their unique role in maintaining physiological harmony, disease prevention, and enhancing bodily resilience. Bridging classical Unani thought with present day scientific insights, this work highlights the relevance of *Muqawwiyāt* as prototypes for developing adaptogenic, organ-protective, and homeostasis-promoting interventions. *Muqawwiyāt*, whether organ-specific or general tonics as described in classical Unani literature, hold considerable potential for integration into contemporary therapeutic field, offering a bridge between traditional wisdom and modern biomedical understanding. Moreover, this conceptual synthesis provides a foundation for translational research to elucidate the mechanisms of *Muqawwiyāt* and to rediscover Unani drugs that have been long recognized for their tonic potential which may find renewed relevance in contemporary medicine, where their therapeutic applications often remain underexplored or unrecognized.

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ABBREVIATIONS

ATP: Adenosine triphosphate; **GABA:** Gamma aminobutyric acid; **HPA:** Hypothalamo-pituitary Axis; **TCM:** Traditional Chinese Medicine; **PGC-1α:** Peroxisome proliferator-activated receptor gamma coactivator-1.

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

REFERENCES

- Ahmad, W., Sofi, G., Alam, M. A., Zulkifile, M., and Ahmad, B. (2021). Understanding Holism in the light of principle underlying practice of Unani Medicine. *Reviews on Environmental Health*, 37(2), pp 1-11. <https://doi.org/10.1515/reveh-2021-0009>
- Efferth, T., Shan, L., and Zhang, Z.-W. (2016). Tonic herbs and herbal mixtures in Chinese medicine. *World Journal of Traditional Chinese Medicine*, 2(1), pp. 10. <https://doi.org/10.15806/j.issn.2311-8571.2015.0037>
- Ghani HN. 2010. *Khazain al-Mufradāt*. (Vol. 1. Pp 127) New Delhi: Idara Kitab ul-Shifa
- Götti, R. P., Melzer, J., and Saller, R. (2014). An approach to the concept of tonic: suggested definitions and historical aspects. *Forschende Komplementärmedizin* (2006), 21(6), pp. 413-417. <https://doi.org/10.1159/000369767>
- Hakim MA. 2015. *Bustān al-Mufradāt*, New Delhi: Idara Kitab ul-Shifa. Pp 64,131,273
- Hamdānī SK. 2018. *Usūl Tibb*. New Delhi: Govt. of India, Ministry of Health and Family Welfare, Dept. of Ayurveda, Yoga and Naturopathy, Unani, Siddha and Homoeopathy; pp. 390-391
- Hossain, M. M. (2011). Therapeutic orchids: traditional uses and recent advances-An overview. *Fitoterapia*, 82(2), pp. 102-140. <https://doi.org/10.1016/j.fitote.2010.09.007>
- Hosseinzade, A., Sadeghi, O., Naghdipour Biregani, A., Soukhtehzari, S., Brandt, G. S., and Esmailzadeh, A. (2019). Immunomodulatory Effects of Flavonoids: Possible

- Induction of T CD4+ Regulatory Cells Through Suppression of mTOR Pathway Signaling Activity. *Frontiers in Immunology*, 10, pp 1-12 <https://doi.org/10.3389/fimmu.2019.00051>
- Ibn Rushd. 1987. *Kitab ul-Kulliyāt*. New Delhi: Central Council for Research in Unani Medicine, pp. 225
- Itrat, M. (2020). Methods of health promotion and disease prevention in Unani medicine. *Journal of Education and Health Promotion*, 9(1), p. 168. https://doi.org/10.4103/jehp.jehp_618_19
- Jornayvaz, F. R., and Shulman, G. I. (2010). Regulation of mitochondrial biogenesis. *Essays in Biochemistry*, 47, pp. 69-84. <https://doi.org/10.1042/bse0470069>
- Kabbiruddin M. 2014. *Makhzan al-Mufaradat*, New Delhi: Idara Kitab ul-Shifa; pp. 13,76,481
- Khan MA. 2018. *Muḥīt A'zam*. (Vol. 1. Pp 91) New Delhi: Central Council for Research in Unani Medicine
- Kiddane, A. T., and Kim, G.-D. (2020). Anticancer and Immunomodulatory Effects of Polysaccharides. *Nutrition and Cancer*, 73(11-12), pp. 2219-2231. <https://doi.org/10.1080/01635581.2020.1861310>
- Matteo Della Porta, Maier, J. A., and Cazzola, R. (2023). Effects of *Withania somnifera* on Cortisol Levels in Stressed Human Subjects: A Systematic Review. *Nutrients*, 15(24), pp. 5015-5015. <https://doi.org/10.3390/nu15245015>
- Murthy, S. V., Fathima, S. N., and Mote, R. (2022). Hydroalcoholic Extract of *Ashwagandha* Improves Sleep by Modulating GABA/Histamine Receptors and EEG Slow-Wave Pattern in *in vitro* - *in vivo* Experimental Models. *Preventive Nutrition and Food Science*, 27(1), pp. 108-120. <https://doi.org/10.3746/pnf.2022.27.1.108>
- Rajapara, A. M., Bhatt, V. P., and Shah, M. B. (2021). Phytochemical and Pharmacological Investigation on *Onosma bracteatum* Wall. *Asian Journal of Biological and Life Sciences*, 10(1), pp. 141-149. <https://doi.org/10.5530/ajbls.2021.10.21>
- Siddiqui, N., and Ayyub, A. (2025). Herbal Drugs as Brain Tonics (Muqawwi-e-Dimag) Mentioned in Unani Medicine-A Review. *Life Science Research Communications*, 1(2), pp. 47-54. <https://doi.org/10.5530/lsrc.1.2.10>
- Sina I. 2010. *Alqanūn Fi-Tibb*, Translated by G. Hussain Kanturi. (Vol 2, pp 258) New Delhi: Aijaz publishing house
- Sina I. 1998. *Alqanūn Fi-Tibb*, (Vol 2, p 22). New Delhi: Department of Islamic studies, Jamia Hamdard
- Tonic. (2012). The Free Dictionary. <https://medical-dictionary.thefreedictionary.com/tonic>
- Usmani, Q. I., Jahan, N., Aleem, M., and Hasan, S. A. (2021). *Aatrilal (Ammi majus L.)*, an important drug of Unani system of medicine: A review. *Journal of Ethnopharmacology*, 276, pp. 114-144. <https://doi.org/10.1016/j.jep.2021.114144>
- Wujastyk, D. (2017). Acts of Improvement. *History of Science in South Asia*, 5(2), pp. 1-36. <https://doi.org/10.18732/hssa.v5i2.26>