



# Evaluation Of Traditional Medicinal Plants for The Treatment of Metabolic Syndrome

Sumera Mehfooz<sup>1</sup> Imtiyaz Ahmad Mir<sup>2</sup> Arsheed Iqbal<sup>3</sup>

1. Research Associate RRIUM Srinagar
2. Medical officer AYUSH J and K Health and Medical Education
3. Research officer Unani RRIUM Srinagar

Corresponding author : [sumera.akecity@gmail.com](mailto:sumera.akecity@gmail.com)

## Abstract

Metabolic syndromes, encompassing a cluster of interrelated conditions such as obesity, diabetes mellitus, hypertension, and dyslipidemia, represent an escalating global public health concern. The Unani system of medicine, a centuries-old traditional medical practice, offers a diverse pharmacopeia of plant-based formulations that have long been employed to address metabolic imbalances. This review aims to evaluate the therapeutic potential of selected Unani medicinal plants in the prevention and management of metabolic syndromes. Drawing insights from classical Unani texts alongside contemporary pharmacological research, key botanicals-including *Zingiber officinale* (Zanjabeel), *Trigonella foenum-graecum* (Hulba), *Commiphora mukul* (Muqil), *Nigella sativa* (Kalonji), *Carvie cumin*(Zeera Siyah), *Pimpinella anisum*(Anisoon), *Coriandrum sativum*(Kishneez), *Gymnema sylvestre* (Gudmaar booti) are explored for their roles in regulating blood glucose levels, modulating lipid profiles, reducing systemic inflammation, and improving overall metabolic function. The review highlights the holistic framework of Unani medicine, which integrates Mizaj (temperament), dietary regulation, lifestyle modification, phytotherapy and Pharmacotherapy. Findings suggest that Unani medicinal plants possess significant potential as complementary or alternative therapies for metabolic syndromes. Nonetheless, further clinical studies and pharmacological validation are imperative to substantiate their efficacy and facilitate their integration into modern evidence-based healthcare systems.

**Key words:** Metabolic syndrome, Unani medicine, Medicinal plants, Lifestyle Modifications

## Introduction

Metabolic disorders represent a group of health conditions characterized by the disruption of normal metabolic processes, often resulting from genetic hormonal, or environmental factors. The most prevalent metabolic disorders today include metabolic syndrome, type 2 diabetes mellitus (T2DM), obesity, dyslipidaemia, non-alcoholic fatty liver disease (NAFLD), and hypertension. Among these, metabolic syndrome is a major global health concern, defined by a cluster of interrelated risk factors such as central obesity, hyperglycaemia, elevated blood

pressure, high triglyceride levels, and reduced high-density lipoprotein (HDL) cholesterol levels.<sup>1</sup>

The increasing prevalence of metabolic disorders is closely associated with sedentary lifestyles, unhealthy dietary patterns, physical inactivity, chronic stress, and urbanization. These disorders significantly increase the risk of cardiovascular diseases, stroke, type 2 diabetes, and overall mortality<sup>2</sup> According to the International Diabetes Federation (IDF), nearly a quarter of the world's adult population is estimated to be affected by metabolic syndrome, indicating its widespread and growing impact on public health.<sup>3</sup> From a pathophysiological perspective, insulin resistance, visceral adiposity, inflammation, and oxidative stress are considered central mechanisms in the development and progression of metabolic disorders.<sup>4</sup> These factors lead to impaired glucose utilization, abnormal lipid metabolism, and increased cardiovascular risk. While modern pharmacotherapy offers targeted management, it often comes with side effects and limitations in long-term use. This has led to increased interest in traditional and complementary systems of medicine, such as Unani, Ayurveda, and Traditional Chinese Medicine (TCM), which offer holistic approaches to managing metabolic health through lifestyle regulation, diet, and natural remedies.<sup>5</sup>

### Unani Perspective on Metabolic Disorders

The Unani system of medicine, rooted in ancient Greco-Arabic tradition and developed by scholars such as Hippocrates, Galen, and Ibn Sina (Avicenna), views health as a state of balance between the four bodily humors—Dam (blood), Balgham (phlegm), Safra (yellow bile), and Sauda (black bile). Each individual is believed to have a unique Mizaj (temperament), and disease arises when there is an imbalance in these humors or a disturbance in temperament.<sup>6</sup> From the Unani perspective, metabolic disorders such as diabetes (*Ziabetus Shakri*), obesity (*Saman-e-Mufrat*), and hyperlipidemia are seen as manifestations of *Su-e-Mizaj* (derangement of temperament), primarily involving cold and moist temperaments or the predominance of Balgham (phlegm) and Sauda (black bile).<sup>7</sup> The Unani system provides a rich and holistic framework for understanding and treating metabolic disorders. Its emphasis on individualized therapy, correction of temperament, lifestyle adjustment, and use of time-tested herbal remedies makes it a promising complementary system for managing complex metabolic conditions. Scientific validation of these traditional therapies through modern pharmacological and clinical studies is essential for integrating Unani medicine into mainstream healthcare for chronic lifestyle diseases.<sup>8</sup>

### Unani Medicinal Plants used in Metabolic Disorders

Unani pharmacotherapy emphasizes the use of single (*Mufrad*) and compound (*Murakkab*) herbal drugs to restore humoral balance and regulate metabolism. Some important plants include:

**1. *Trigonella foenum-graecum* (Hulba)** – Used traditionally as an antidiabetic and hypolipidemic agent. Nowadays research confirms its ability to enhance insulin sensitivity and reduce lipid levels.<sup>9</sup>

**2. *Nigella sativa* (Kalonji)** – Known for antioxidant, anti-inflammatory, and antidiabetic properties. It is believed to correct Sauda and Balgham imbalance.<sup>10</sup>

**3. *Commiphora mukul* (Muqil)** – Employed for hyperlipidaemia and obesity, as it acts as a fat metabolizer and deobstruent, enhancing liver function.<sup>11</sup>

**4. *Zingiber officinale* (Zanjabeel)** – Used for its digestive, warming, and lipid-lowering effects. It stimulates metabolism and is recommended for cold-tempered individuals with digestive weakness.<sup>12</sup>

**5. *Pimpinella anisum* (Anisoon)** - In Unani texts, Anisoon is considered Muqawwi-i-Meda (stomachic), Muqawwi-i-Kabid (liver tonic), and Mufatteh-i-Sudad (deobstruent), supporting its use in improving metabolism and treating hepatic and digestive imbalances. These actions are aligned with its role in preventing and managing metabolic syndromes.<sup>13</sup>

**6. *Carum carvi* (Zeera siyah)** - *Caraway* stimulates digestion and supports liver function, which are crucial in managing obesity and metabolic syndrome.<sup>14</sup>

**7. *Coriandrum sativum* (Kishneez)**

Coriander leaf extract was administered to HFD-fed C57BL/6 mice. Treatment suppressed weight gain, liver weight, and serum levels of ALT, AST, LDL, total cholesterol, and glucose. Insulin resistance (HOMA-IR), hepatic steatosis, fibrosis markers, lipid synthesis genes (SREBP1c, FAS, SCD1), and inflammatory markers (NF- $\kappa$ B, TNF- $\alpha$ , IL-1 $\beta$ ) were significantly reduced. The mechanism involved activation of AMPK and inhibition of SREBP-1c/SCD-1, offering a molecular basis for its metabolic benefits.<sup>15</sup>

**8. *Gymnema sylvestre* (Gurmar booti)** - *Gymnema sylvestre* extract (400 mg/day) for 12 weeks significantly reduced fasting blood glucose, HbA1c, and postprandial glucose levels. It enhanced Insulin sensitivity in type 2 diabetic patients.<sup>16</sup>

**9. *Tinospora cordifolia* (Gilo)** - *Tinospora cordifolia* has the potential to serve as an effective alternative to conventional multidrug treatments commonly used in managing various metabolic disorders. Multiple dosage forms of this medicinal plant have been shown to exhibit broad-spectrum biological activities that help regulate conditions such as diabetes, dyslipidemia, and related health issues. Its rich array of bioactive phytochemicals significantly contributes to its diverse therapeutic effects in addressing metabolic dysfunctions.<sup>17</sup>

## Unani formulations used in metabolic disorders <sup>12,18,19,20</sup>

As per the Data received from Various Authentic Unani Books Many Formulations used in Metabolic disorders which target metabolic dysfunction by enhancing digestion, reducing morbid humors and promoting detoxification are as Under:

S.NO	Formulations	Action	Main indication	Dose

1	Arq-e- Kasni	Muqawwi-e-Kabid (liver tonic)	Zofe Kabid(derangement in liver function)	60-120ml per day
2	Arq -e- Zeera	Muqawwi-e-Meda (Stomach tonic)	Zufe Hazm (indigestion), Nafkh-e-Shikam(flatulence)	75ml twice daily
3	Habb-e- mastagi	Muqawwi-e- Meda (stomach Tonic)	Zufe Meda (Stomach Weakness) Nafkh-e-Shikam(flatulence)	500mg-1gm
4	Habb-e- Hilteet	Muqawwi-e- Meda (stomach Tonic)	Zufe Hazm (indigestion) Nafkh-e-Shikam(flatulence),Zufe ishteha(loss of Appetite)	500-1gm
5	Jawarish Amla sada	Muqawwi-e- Meda (stomach Tonic)	Kasir-e-riyah(Carminative),Hazi m (digestive)	5-10gm
6	Jawarish bisbasa	Muqawwi-e- Meda (stomach Tonic)	Zufe Hazm (indigestion) Zufe ishteha(loss of Appetite) Nafkh-e-Shikam(flatulence),	5-10gm
7	Majoon Dabeed-ul-Ward,	Muqawwi-e-Kabid (liver tonic)	Zofe Kabid(derangement in liver)	5gm
8	Majoon Muqawwi-e- Meda	Muqawwi-e- Meda (stomach Tonic)	Zufe Hazm (indigestion) Zufe ishteha(loss of Appetite) Zufe Meda(Weakness of Stomach)	5gm twice daily
9	Qurs Tabasheer	Muqawwi-e- Meda (stomach Tonic)	Zufe Meda(Weakness of Stomach)	3-5gm daily
10	Safoof-e -Mohazzil	Antioxidant, Antiinflammatory, Hypocholesterolemic Activity	Siman-e-Mufrit (Anti Obesity)	5-10gm daily

## Conclusion

The Unani system provides a rich and holistic framework for understanding and treating metabolic disorders. Its emphasis on individualized therapy, correction of temperament, lifestyle adjustment, and use of time-tested herbal remedies makes it a promising complementary system for managing complex metabolic conditions. Scientific validation of these traditional therapies through modern pharmacological and clinical studies is essential for integrating Unani medicine into mainstream healthcare for chronic lifestyle diseases.

**Conflict of Interest:** Nil**References –**

1. Alberti, K.G.M.M., Eckel, R.H., Grundy, S.M., et al. (2009). Harmonizing the metabolic syndrome. *Circulation*, 120(16), 1640–1645.
2. Grundy SM. Metabolic Syndrome Pandemic. *Arterioscler Thromb Vasc Biol*. 2008Apr;28(4):629-36.
3. <https://idf.org> <https://idf.org/media/uploads/2024/06/IDF-Annual-Report-2023.pdf> sited on 02-06-2025
4. Eckel RH, Grundy SM, Zimmet P, The metabolic syndrome. *Lancet*. 2005 Apr;365(9468):1415-28.
5. Makbul SAA, Azmi SI, Akhtar SM. Crude drugs of Unani Medicine. CRC Press V.1 p 337- 351.
6. Ahmad B, Akhtar J. Phcog Rev. Review Article Unani System of Medicine. *Pharmacognosy Reviews* .Vol 1, Issue 2, Jul-Dec;2007.
7. Quamri Abul Mansoor Hasan Bin Nooh. Ghina Muna (Urdu Translation by CCRUM). New Delhi: CCRUM, 2008.
8. Azrani .A. Mufarreh –ul- Quloob ( urdu translation ). Idara kitab ul shifa. 2002.
9. Awad E Cerezuela R Estiban MA. Effects of Fenugreek (*Trigonella foenum Graecum*) on Gilthead Seabream (*Sparus Aurata L.*) Immune status an growth performance. 2025, V-45;2:pp 454-464.
10. Ahmad A, Hussain A, Mujeeb M, Kishore K. A review on therapeutic potential of *Nigella sativa*: A miracle herb. 2013 ;3(5):337-52.
11. Anas M Rehman Z Ahmad T. Anti hyperlipidaemic activity of *Commiphora mukul*: A review. *PPIJ* 2019; 8 (1):496-498.
12. Ibn Sina Shaikhur Rais. *Al Qanoon* (Urdu Translation by Kantoori GH). New Delhi: Idara Kitabush Shifa, 2007.
13. Kabeeruddin, M. (1931). *Bayaz-e-Kabeer*. Hyderabad: Dafter al-Maseeh.
14. Sachan AK, Das DR, Kumar M. *Carum carvi*-An important medicinal plant. *Journal of Chemical and Pharmaceutical Research*, 2016, 8(3):529-533.
15. Gu MJ, Ahn Y, Lee YR, Yoo G, Kim Y, Choi Y, Ha SK, Kim D. *Coriandrum sativum* L. Leaf Extract Ameliorates Metabolic Dysfunction-Associated Steatotic Liver Disease by Modulating the AMPK Pathway in High Fat-Fed C57BL/6 Mice, *pub med. Nutrients*. 2024 Nov 30;16(23):4165.
16. Nkono BL, Blinda DC, Tcheudi B, Adinga GR, Dzeufiet PD, Sokeng S, Kamtchouing P. Effect of the aqueous extract of *Gymnema sylvestre* on some metabolic . *Pharmacological Research – Modern Chinese Medicine* 16 (2025) 100642.
17. Devi P. Role of *Tinospora cordifolia* in metabolic health disorders: An updated review. *HJHS* 2021;6 (1)15-23.
18. Anonymous. National formulary of Unani medicine. Part 1. Department of AYUSH, Ministry of Health and Family welfare, Government of India. 2006.
19. Anonymous. National formulary of unani medicine. Part V. Department of AYUSH, Ministry of Health and Family welfare, Government of India. 2008.
20. Gupta KY, Mehta J, Gupta P. Anti obesity of Safoof-e-mohazzil, A poly herbal formulation in cafeteria diet induced obesity in rats. *Indian journal of experimental biology*, Vol -50; Nov-2012; 50 (11) pp 776-784.