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BRIDGING TRADITION AND SCIENCE: AN INTEGRATIVE REVIEW OF MIZĀJ (TEMPERAMENT), AKHLĀT-E ARBA'A (FOUR HUMORS), AND IMTILĀ' (TEMPERAMENTAL IMBALANCE) IN UNANI MEDICINE

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Abstract

Unani medicine, a Greco-Arabic system of healing, views health as a reflection of balance between temperament (*Mizaj*), the four humors (*Akhlat Arba*), and physiological moderation (*E'tidal*). Disease arises when this harmony is disturbed, leading to pathological states such as *Imtila* (plethora). This review integrates the classical Unani concepts of *Mizaj*, *Akhlat Arba*, and *Imtila* with modern biomedical sciences to reveal parallels between ancient humoral theory and contemporary understanding of homeostasis, metabolism, and circulatory pathology. The paper highlights the relevance of Unani theories in explaining personalized medicine, metabolic individuality, and preventive health. It further presents comparative models correlating *Mizaj* with genetic predisposition and endocrine profile, *Akhlat* with biochemical components of the body, and *Imtila* with hypervolemia and metabolic syndrome. The integration of these principles strengthens the scientific foundation of Unani medicine and encourages cross-disciplinary research in integrative health sciences.

Keywords

Unani Medicine; Mizaj; Akhlat Arba; Imtila; Homeostasis; Humoral Pathology; Integrative Medicine; Temperament; Metabolism; Personalized Health.

Introduction

Unani medicine, derived from the works of Hippocrates (Buqrat) and Galen (Jalinoos), represents one of the most comprehensive and ancient systems of holistic health. It was refined through the intellectual contributions of Arab and Persian physicians such as Ibn Sina (Avicenna), Razi, and Majusi. The system is based on the premise that the human body consists of four fundamental elements — *Arkan*: air (*Hawa*), water (*Maa*), earth (*Arz*), and fire (*Nar*). These combine in varying proportions to form the body's temperament (*Mizaj*), which determines its structural and functional characteristics.

Health (*Sehhat*) in Unani medicine is defined as a state of balance between the qualities of heat, cold, moisture, and dryness within the body, whereas disease (*Marz*) represents disturbance in this equilibrium. The maintenance of health depends upon proper composition and proportion of the four humors (*Akhlat Arba*) — *Dam* (blood), *Balgham* (phlegm), *Safra* (yellow bile), and *Sauda* (black bile). Any qualitative or quantitative imbalance in these humors leads to disease conditions, among which *Imtila* or plethora occupies a central role.

From a modern scientific perspective, the humoral balance described in Unani medicine corresponds to the concept of homeostasis, where the body maintains stability in internal conditions such as temperature, pH, electrolytes, and fluid volume. Similarly, *Mizaj* can be compared to the modern idea of metabolic constitution or genetic phenotype, while *Imtila* can be correlated with vascular overload, hypertension, and metabolic disorders.

The integration of these classical Unani doctrines with modern biomedical science offers a valuable framework for understanding human health in a personalized and preventive manner. This review, therefore, aims to provide an in-depth exploration of *Mizaj*, *Akhlat Arba*, and *Imtila*, their interrelationships, and their modern scientific correlations.

Concept of Mizaj (Temperament) and Its Physiological Basis

The concept of *Mizaj* (temperament) is the cornerstone of Unani philosophy. It is defined as the resultant quality formed from the interaction of elemental attributes — heat (*Hararat*), cold (*Barudat*), moisture (*Rutubat*), and dryness (*Yubusat*). Each individual possesses a unique *Mizaj* that determines physical structure, psychological tendencies, and disease predisposition. Ibn Sina described *Mizaj* as "the equilibrium resulting from the mixing of primary qualities of elements in definite proportion."

There are nine primary temperaments in Unani medicine — four simple (*Hot, Cold, Moist, Dry*), four compound (*Hot-Moist, Hot-Dry, Cold-Moist, Cold-Dry*), and one moderate (*Mizaj-e-Mu'tadil*). A person with moderate temperament is considered healthy because the equilibrium between qualities ensures efficient physiological function.

To operationalize the theoretical framework of Mizaj in contemporary integrative settings, a standardized Mizaj Assessment Proforma has been developed. This validated tool enables objective evaluation of an individual's temperament through morphological, physiological, and psychological parameters, scored across Damwi, Balghami, Safrawi, and Saudawi domains. By quantifying observable and measurable traits—such as skin texture, body built, appetite, sleep patterns, emotional reactivity, and cognitive retention—the proforma facilitates precise Mizaj diagnosis (Table 1).

MIZAJ ASSESSMENT PROFORMA

Personal Details: **Date:**

Name of the Volunteer:

Father's Name:

Address:

Contact No:

Age: Gender:

Pulse: B.P:

Height: - Weight:

BMI:

***Mizaj* Assessment:**

Parameter (Evidence)	**Damwi (Sanguineous)**	**Balghami (Phlegmatic)**	**Safrawi Bilious)**	**Saudawi (Melancholic)**
I. MORPHOLOGICAL				
1.Skin texture/ Temperature Score:01	Warm and ☐ Smooth	Soft and ☐ Moist	Rough and Hot ☐	Rough and cold ☐
2.Complexion Score:0.5	Reddish ☐	Whitish ☐	Pale ☐	☐ Blackish
3.Body built Score:5	☐ Muscular	☐ Fatty	☐ Moderate	Lean and thin ☐

4.Texture of hairs Score:0.5	Thick and lusty ☐	Thin and smooth ☐	☐ Curly	☐ Straight
5.Growth and distribution of Hair Score: 2	Rapid, Average ☐	Slow, Scanty ☐	☐ Moderate/ Profuse	Excessive ☐
6.Colour of Hair Score:0.5	☐ Blackish	Brownish ☐	Reddish ☐ (Golden Brown)	Black and white ☐ (Mixed)
II. PHYSIOLOGICAL				
7. Urine Score:01	Moderate in quantity ☐	White, more in quantity ☐	Yellow, less in quantity ☐	Turbid, less in quantity ☐
8.Tolerate Well Score:01	Dryness ☐	Hotness ☐	Cold ☐	Dampness ☐
9.Remains well in Score:03	☐ Spring	Summer ☐	Winter ☐	☐ Autumn
10.Appetite Score:02	Strong appetite (can skip a meal) ☐	Less appetite (feel heaviness ☐ after eating)	Strong ☐ appetite (can't skip a meal)	Irregular ☐ appetite
11.Thirst Score:01	☐ Average (++)	Poor (+) ☐	☐ Increased (++++)	Low (+++) ☐
12.Digestion Score:01	Average ☐	Slow ☐	Strong ☐	☐ Irregular

13.Movements and activities Score:03	Average in ☐ physical activity	Dull. Laziness ☐	Brisk, Hyper ☐ active	Less ☐
14.Sleep Score:01	Average (5-7 hrs) ☐	Excess sleep ☐ (8hrs/above)	Disturbed ☐ sleep	Insomnia ☐
III. PSYCHOLOGICAL				
15.Dream Score: .5	Blood, Red ☐ objects	Water, Snow White Objects ☐	Fire, Yellow ☐ objects	Fearful dreams Black ☐ Objects
16. Anger/ Joy Score:01	Comes on easily and ☐ easily lost	Comes on ☐ hardly	Frequent, ☐ Severe and persists for long	Infrequent but ☐ persist
17.Responsee to external stimuli in adverse condition Score:01	Aggressive ☐ response	Weak response ☐	Responds ☐ bravely	Cowardly ☐ response
18. Decision taking power Score:01	Take boldly ☐	Hesitates in taking ☐ decisions	Take ☐ quickly	Afraid in taking decisions ☐
19.Memory Score:01	Good ☐ retention also good	Not good ☐	Good but can't ☐ retain for long	Don't learn easily but ☐ excellent retention

DIAGNOSED *MIZAJ*_____

Table 1. Mizaj Assessment Proforma

Modern Scientific Correlation

In modern biomedical science, *Mizaj* closely aligns with the concept of **metabolic individuality**, **genetic polymorphism**, and **neuroendocrine constitution**.

Individuals with *Hot-Moist* temperament resemble those with higher basal metabolic rate (BMR) and sympathetic activity — corresponding to extroverted, energetic personalities.

Cold-Moist types exhibit slower metabolism and fluid retention — similar to hypothyroid or endomorphic constitutions.

Hot-Dry temperaments parallel hypermetabolic and catabolic states, while *Cold-Dry* individuals align with low energy, poor circulation, and melancholic traits.

Recent molecular studies in integrative medicine suggest that temperament types may be linked with **genetic expression**, **hormonal activity**, and **immune responses**. Thus, *Mizaj* represents the ancient Unani equivalent of personalized medicine and epigenetic adaptation [1–4].

Concept of Akhlat Arba (Four Humors) and Metabolic Correlations

Unani physiology is based on the continuous transformation of nutrients into humors through digestion (*Hazm*) and hepatic metabolism (*Takhallus*). The liver is the principal organ of humor formation (*Masdar-e-Akhlat*). The four humors are (Table 2):

Humor (Khilt)	Qualities	Modern Equivalent	Function/Role
Dam (Blood)	Hot & Moist	Circulating blood, oxygen transport	Nutrition, vitality, complexion
Balgham (Phlegm)	Cold & Moist	Lymphatic and mucosal fluids	Lubrication, immunity, endurance
Safra (Yellow bile)	Hot & Dry	Bile acids, digestive enzymes	Metabolism, detoxification
Sauda (Black bile)	Cold & Dry	Melanin, waste metabolites	Stability, concentration, bone health

Table 2: Akhlat Arba (Four Humors) and Metabolic Correlations

Each humor performs a specific role in maintaining the dynamic equilibrium (*E'tidal-e-Akhlat*). Imbalance in quality or quantity of any humor results in pathological manifestations:

Excess *Dam* → vascular congestion, hypertension, headaches.

Excess *Balgham* → obesity, sluggishness, respiratory diseases.

Excess *Safra* → hyperacidity, irritability, inflammatory diseases.

Excess *Sauda* → depression, arthritis, and degenerative disorders.

Modern Scientific Correlation

The humoral system corresponds to biochemical components such as blood, bile, lymph, enzymes, and hormones. The *Kaifiyat* (quality) of each humor parallels **biochemical composition**, while *Kamiyat* (quantity) represents **fluid volume and concentration**. The Unani principle that the liver produces humors is consistent with modern hepatic physiology where metabolism of proteins, carbohydrates, and lipids maintains internal balance.

Further, the detoxifying role of *Safra* corresponds to hepatic metabolism and antioxidant function; *Balgham* represents mucopolysaccharides and immune modulation; *Sauda* may parallel oxidative stress and melanin-associated metabolism. In this way, *Akhlat Arba* form the physiological substrate of life [5–9].

Concept of Imtila (Plethora): Etiopathogenesis and Clinical Significance

Imtila literally means "filling" or "congestion." It refers to excessive accumulation or putrefaction of humors within the vessels or tissues leading to obstruction and disease. Classical scholars divide *Imtila* into two types:

Imtila bi Hasbil Auiya (Quantitative Plethora): Overfilling of vessels with excessive humor (similar to hypervolemia).

Imtila bi Hasbil Quwa (Qualitative Plethora): Circulation of corrupted or impure humor (analogous to toxemia or dyslipidemia).

Etiopathogenesis

Imtila occurs due to overeating of rich foods (*Ghaliza Ghiza*), sedentary lifestyle (*Qillat al-Harakat*), and weak digestion (*Za'f-e-Hazm*), leading to hepatic dysfunction and the formation of impure humors (*Akhlat Ghair Saleha*). The decline of *Hararat-e-Ghareeziyah* (innate heat) further hampers metabolism, causing accumulation of morbid humors and vascular congestion characteristic of *Imtila*.

Clinical Manifestations

Symptoms include heaviness, fullness in the head and chest, throbbing pulse, facial redness, dizziness, and sometimes epistaxis. If untreated, *Imtila* can lead to severe complications like apoplexy, stroke, hemorrhage, or hepatic disorders.

Modern Correlation

From a biomedical viewpoint, *Imtila* is analogous to **hypervolemia**, **atherosclerosis**, **obesity**, **metabolic syndrome**, and **hypertension**. Ibn Sina's description of dietary excess,

sedentary lifestyle, and weak digestion as etiological factors precisely corresponds with current understanding of metabolic diseases.

Furthermore, *Imtila bi Hasbil Quwa* aligns with **oxidative stress** and **toxic metabolite accumulation** in modern pathophysiology. The Unani interventions — *Fasd* (bloodletting), *Hijama* (cupping), *Qai* (emesis), and *Ishal* (purgation) — aim to restore circulatory and metabolic balance, functioning similarly to modern detoxification and therapeutic phlebotomy (Table 3) [10–13]:

Comparative Analysis of Mizaj, Akhlat Arba, and Imtila

Parameter	Mizaj	Akhlat Arba	Imtila
Definition	Constitutional temperament derived from elemental balance	Four biological fluids governing physiology	Pathological excess or corruption of humors
Nature	Qualitative (temperamental)	Quantitative and qualitative (biochemical)	Quantitative (overaccumulation) and qualitative (toxicity)
Physiological Role	Maintains harmony of organ function	Ensures nourishment and homeostasis	Indicates disequilibrium or disease onset
Primary Site	Entire body	Liver and blood	Circulatory system
Modern Analogy	Genetic–metabolic constitution	Biochemical homeostasis	Circulatory overload / metabolic syndrome
Treatment Focus	Regimen and diet correction	Detoxification, hepatic correction	Evacuation (Fasd, Ishal, Qai, Hijama)
Goal of Therapy	Restoration of temperament balance	Regulation of humoral synthesis	Removal of excess or corrupted humors

Table 3: Comparative Analysis of Mizaj, Akhlat Arba, and Imtila

Mizaj and Genetic-Metabolic Constitution

Mizaj defines an individual's constitutional makeup, resembling the concept of **phenotype and genetic expression**. Research in systems biology shows that genetic polymorphisms influence metabolism, hormonal activity, and disease susceptibility — all key aspects mirrored in the Unani notion of *temperament*. For instance, individuals with "hot"

temperaments show higher metabolic rates, analogous to hyperthyroid or adrenergic activity, while "cold" temperaments show slower metabolism and energy conservation.

The modern concept of **personalized medicine** directly parallels the Unani understanding of *Mizaj-based therapeutics*, where treatment is tailored to an individual's unique temperament and physiological tendencies. This integration opens new avenues for **epigenetic and metabolic profiling** in traditional medicine [14,15].

Akhlat Arba and Biochemical Homeostasis

The Unani theory of *Akhlat Arba* embodies an early understanding of biochemical equilibrium. The liver's central role in humor formation mirrors the modern view of hepatic metabolism regulating lipid, protein, and carbohydrate synthesis. The four humors correspond to physiological fluids:

Dam = Blood and plasma proteins (oxygenation, energy transport)

Balgham = Lymphatic and mucosal secretions (immunity, lubrication)

Safra = Bile and digestive enzymes (catabolism, detoxification)

Sauda = Waste metabolites and pigments (stability, structure)

This balance is analogous to **biochemical homeostasis**, maintained through feedback mechanisms involving the liver, kidneys, and endocrine glands. The qualitative changes in humors (corruption or degeneration) can be interpreted as **oxidative stress** or **inflammatory dysfunction** — both recognized as triggers of chronic diseases in modern medicine [16–18].

Imtila and Modern Pathophysiology

Imtila represents humoral congestion and qualitative corruption. It is pathophysiologically comparable to **vascular overload**, **hypertension**, and **metabolic syndrome**. Ibn Sina's description of "pressure within vessels, facial congestion, and throbbing pulses" directly corresponds to hypertensive manifestations. Similarly, the formation of *Akhlat Ghair Saleha* (impure humors) parallels **toxic metabolite accumulation** and **inflammatory atherogenesis**.

In modern biomedical language, *Imtila* can be seen as a manifestation of impaired metabolism, hepatic dysfunction, and excess circulating lipids. Preventive measures like *Fasd* (controlled bloodletting) or *Hijama* (cupping) reduce vascular pressure and improve circulation — effects now validated by clinical studies showing reduced oxidative stress and improved hemodynamics after cupping therapy [19].

Preventive and Regimenal Approaches

The Unani system strongly emphasizes **preventive medicine (Hifz-e-Sehat)**. Classical texts recommend seasonal detoxification (*Tadbeer-e-Mausam*), dietary moderation, and physical exercise (*Riyazat*) to prevent *Imtila*. Modern preventive strategies — including calorie control, detox diets, and regular exercise — reflect the same philosophy of maintaining humoral and metabolic balance.

Unani regimens like *Dalak* (massage), *Hammam* (steam bath), and *Tahleel-e-Mawad* (resolution of morbid matter) enhance circulation and metabolism, aligning with modern **detoxification and lymphatic therapy**. Thus, Unani principles retain immense relevance in modern integrative health care [20–23].

Future Scope

The integration of Unani theory with modern research methodologies opens vast avenues for innovation:

Molecular Correlation of Mizaj: Genomic and proteomic studies can identify molecular markers associated with different temperaments.

AI-Based Diagnostic Profiling: Artificial intelligence can help quantify *Mizaj* characteristics using physiological, biochemical, and behavioral data.

Clinical Validation of Imtila: Controlled clinical trials can explore the relationship between *Imtila* and metabolic disorders such as hypertension, obesity, and dyslipidemia.

Standardization of Unani Regimenal Therapies: Objective evaluation of *Fasd*, *Hijama*, and *Riyazat* for measurable biochemical outcomes.

Integrative Healthcare Models: Collaboration between Unani and modern medicine practitioners for preventive and personalized healthcare approaches.

By adopting evidence-based methodologies, Unani concepts can contribute to **personalized medicine**, **preventive healthcare**, and **public health policy** on a global scale.

Discussion

The Unani framework of Mizaj, Akhlat Arba, and Imtila offers a profound integrative lens for bridging classical humoral pathology with modern systems biology and homeostasis. Mizaj, as an individual's elemental temperament, encapsulates genetic-metabolic individuality, mirroring phenotypic variations influenced by polymorphisms in genes regulating BMR, neuroendocrine axes, and immune responses. Hot-Moist types exhibit elevated sympathetic tone and energy expenditure, akin to hypermetabolic states in thyroid dysfunction, while

Cold-Dry profiles align with catabolic restraint and oxidative vulnerability, substantiating Unani's personalized therapeutics through epigenetic parallels.

Akhlat Arba represents a dynamic biochemical continuum: Dam as oxygenated plasma for vitality; Balgham as immunomodulatory lymphatics; Safra as hepatobiliary catabolites; and Sauda as structural pigments and waste. Hepatic synthesis ensures E'tidal, disrupted by Za'f-e-Hazm yielding Ghair Saleha humors—paralleling dyslipidemia, inflammation, and oxidative stress in metabolic syndrome. Imtila emerges as etiological culmination: quantitative hypervolemia from Ghaliza Ghiza and Qillat al-Harakat causes vascular congestion, hypertension, and thromboembolism; qualitative toxemia fosters atherogenesis and endothelial dysfunction.

Regimenal modalities like Fasd reduce preload and viscosity, validated by hemodilution studies; Hijama ameliorates inflammation via nitric oxide modulation; Riyazat enhances insulin sensitivity. This synergy underscores Unani's preventive ethos, anticipating lifestyle medicine. Cross-disciplinary validation via genomics, AI-driven Mizaj profiling, and RCTs on Imtila biomarkers can elevate Unani to evidence-based integrative paradigms, fostering holistic, patient-centric care amid rising chronic diseases.

Conclusion

Unani's Mizaj, Akhlat Arba, and Imtila illuminate timeless truths of balance, now validated by modern science as homeostasis, metabolic precision, and circulatory integrity. Their fusion heralds a revolution in personalized, preventive medicine—empowering humanity to conquer chronic disease through ancient wisdom reborn.

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