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Review Article

Mizāj (Temperament) - A Scientific Approach to Describe Its Formation

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ABSTRACT

Purpose: In this paper, we shall try to elaborate the concept of *Mizāj* (Temperament) in the light of contemporary developments that is the formation of compounds at atomic and molecular level and try to elaborate the elemental concept of *Mizāj* which is thought to be the most appropriate theory regarding *Mizāj.*

Background: *Mizāj* is the most vital however difficult theory of Unani medicine. Several Unani scholars have explained it at length in the past. Despite of all the descriptions and lengthy argumentations, its accurate and substantial meaning could not be resolute and is still undecided.

Methodology: The role played by humors in the formation of temperament is indistinct. Sometimes temperament is indicated as a uniform quality created in the compound by interaction of opposite qualities of elements (*Arkān*) and sometimes it is characterized as a dominant humoral quality. The actual ground of these differing statements about *Mizāj* is the concept of four qualities and also deprivation of information of Unani physicians about the forces which leads to the combination of elements due to lack of advancements in that era. Out of so many theories and concepts that have been given regarding *Mizāj*, understanding them one by one, we shall try to approach the most appropriate one.

Conclusion: The role of qualities of elements, and humors, and diet in the formation of temperament as described by Unani physicians, are indirectly related to the role of elements in the formation of temperament; as humors and diet both are formed by elements as well and qualities of elements here is an indicative of the atomic structure.

Key words: *Mizāj*, Temperament, Unani medicine

INTRODUCTION

Mizāj has been an inseparable part of Greek philosophy. Every compound that exists in this universe possesses *Mizāj*. Since we are talking about every compound on this universe, hence human beings also possess *Mizāj*. As *Ṭibb* deals with the human body, *Mizāj* plays an integral entity for preservation of health and prevention of occurrence of disease. Therefore, it is necessary to understand *Mizāj* in the most apprehensive way and apply it in every aspect of *Ṭibb* accordingly. *Mizāj* has been described as Asbāb Ṣuriyya (Formal Causes) for the human body by Aristotle. Asbāb Suriyya are the particular and specific forms of body which come in existence, after actions & reaction of efficient factors (The essential & non-essential factors which brings about a change or maintain the states of the body). [1] Importance of *Mizāj* is not only confined to just being an essential factor for the human existence but also in other fields such as diagnosis and treatment. The concept of *Mizāj* is about 350 BC old. Since then, many theories have been given regarding *Mizāj* such as what is *Mizāj* and

how is *Mizāj* formed. The milestones in the development of current theory of *Mizāj* are marked by philosophers like *Jalīnūs* and *Ibn Sīnā*. In the light of advanced knowledge; we have come to know that how compounds are formed at microscopic/atomic level, so we can comprehend the theory of *Mizāj* in that regard and can make the views of the Unani philosophers approachable in a scientific way.

BASIS OF *MIZĀJ*: The Greeks studied the human body in terms of its structure and function. For this purpose they categorized all human beings into four types of *Mizāj*. When they discussed the compositions of human body, seven prime factors (*Umūr Ṭabī'yya*) were introduced upon which the whole body depends. *Mizāj*ranks second among these factors. Our body works on the basis of these seven fundamentals. No one can escape even a single from these seven fundamentals because these are the basics of life. These are *Arkān, Mizāj, Akhlāt, 'Aḍā, Arwāḥ, Quwā and Af'āl.*

Mizāj has been explained by each and every Unani physician and it is the most important fundamental concept of *Ṭibb.* Unaniphysician ***Buqrāt***(460-370 BC) systemized it into a working theory. He believed that certain human emotions, moods, and behaviors were caused by body fluids (called "humors"): blood, yellow bile, black bile, and phlegm. Next, ***Jālinūs***(AD 131-200) developed the first typology of temperament in his dissertation *De temperamentis*, and searched for physiological reasons for different behaviors in humans. He mapped them to a matrix of hot/cold and dry/wet taken from the four elements. [2] A lot was done and developed by ***Buqrāt*** and ***Jālinūs***, but the Arabs worked more assiduously on the theory of temperaments. They were the first to locate relationship between diseases, various humors and the disturbance of temperaments. [3]

TEMPERAMENT AS DEFINED BY DIFFERENT SCHOLARS: According to *Jalīnūs,* "Temperament is a quality produced by action and reaction of opposite qualities of body fluids (*Akhlāṭ*). When these components interact by virtue of their respective powers (qualities), a condition is achieved which is found in equal proportions in all the components of that intermixture; this is called temperament". [4] In *'Ali Ibn AbbāsMajūsī's* views, "All sorts of bodies (light or heavy), which are found in this ever-changing world are formed by four elements (*Usṭuqussāt*) after mixing in different or uniform quantities in accordance with the needs (of the body). As a result of this mixing, one or two qualities become dominant, over the body, and this is called *'Mizāj'*. It is derived from Arabic word *'Imtizāj'*, meaning 'to mix with each other". [5] *Abū Sahal Masīḥī*said explaining *Mizāj*, "Because there are so many primary components (*Usṭuqussāt*) of the body which are mixed together not in close proximity, it is necessary that the qualities of primary components must be mixed as a whole new qualities arise from inter-mixing of primary components which will be in between the previous qualities, called *Mizāj*". [6] *Ibn Sīnā* perceived temperament as, "The temperament is a quality which is produced by action and reactions of opposite qualities of elements, which are broken up in small particles in order to facilitate the mixing of all particles. When these components interact among themselves by virtue of their respective powers (qualities), a condition is produced, which is found in equal proportion in all components of the elements; this is called temperament. [7] *AltāfAḥmadA'ẓmi* quoted as saying, "Temperament means final combination or form of elements (*Ustuqussat*). In other words formation of temperament in a compound depends on the number, ratio and atomic sequence of elements in the compound. The properties created in the compound differ from the properties of its constituents. A compound retains its properties as long as its elemental form is held together". [8]

As held from the above theories, Unani scholars differed considerably in conceptualizing temperament. According to

Ibn Sīnā, temperament is a corresponding quality common in all components of a compound. That is; the four qualities, even after interaction, remain in the compound but not in a dominant position, and a moderate state comes out of them, which is called temperament. On the other hand, *Majūsī* says, one or two dominant qualities in the compound are named as temperament. That is, one or two qualities, after interaction, remain in the compound as dominant and the remaining qualities disappear. [8]

INTERPRETATION OF *MIZĀJ* AS HELD FROM THE DEFINITION: The definition of *Mizāj* cited by *Ibn Sīnā*h as been followed by his predecessors afterwards. Since then, it has been the most followed concept regarding *Mizāj*. *Ibn Sīnā* said, *the temperament is a quality which is produced by action and reactions of opposite qualities of Anāṣir*. *Anāṣir* corresponds to the elements. The elements that have been identified till date with the help of scientific researches and technological advancements are tabulated below in the periodic table.

1 H																	2 He
3 Li	4 Be											5 B	6 C	7 N	8 O	9 F	10 Ne
11 Na	12 Mg											13 Al	14 Si	15 P	16 S	17 Cl	18 Ar
19 K	20 Ca	21 Sc	22 Ti	23 V	24 Cr	25 Mn	26 Fe	27 Co	28 Ni	29 Cu	30 Zn	31 Ga	32 Ge	33 As	34 Se	35 Br	36 Kr
37 Rb	38 Sr	39 Y	40 Zr	41 Nb	42 Mo	43 Tc	44 Ru	45 Rh	46 Pd	47 Ag	48 Cd	49 In	50 Sn	51 Sb	52 Te	53 I	54 Xe
55 Cs	56 Ba	57-71	72 Hf	73 Ta	74 W	75 Re	76 Os	77 Ir	78 Pt	79 Au	80 Hg	81 Tl	82 Pb	83 Bi	84 Po	85 At	86 Rn
87 Fr	88 Ra	89-103	104 Rf	105 Db	106 Sg	107 Bh	108 Hs	109 Mt	110 Ds	111 Rg	112 Cn	113 Nh	114 Fl	115 Mc	116 Lv	117 Ts	118 Og
		57 La	58 Ce	59 Pr	60 Nd	61 Pm	62 Sm	63 Eu	64 Gd	65 Tb	66 Dy	67 Ho	68 Er	69 Tm	70 Yb	71 Lu	
		89 Ac	90 Th	91 Pa	92 U	93 Np	94 Pu	95 Am	96 Cm	97 Bk	98 Cf	99 Es	100 Fm	101 Md	102 No	103 Lr	

Figure 01: The periodic table, or periodic table of elements [9]

The periodic table, or periodic table of elements, is a tabular arrangement of the chemical elements, arranged by atomic number, electron configuration, and recurring chemical properties, whose structure shows *periodic trends*. The organization of the periodic table can be used to derive relationships between the various properties of elements, and also to predict chemical properties and behaviors of undiscovered or newly synthesized elements. Russian chemist Mendeleev discovered the first recognizable periodic table in 1869. [10]

Further, *Ibn Sīnā said, elements are broken up in small particles in order to facilitate the mixing of all particles*. Due to the lack of microscopical advancements, he could not identify these particles from which he meant electrons which are responsible for the combination of elements as described below:

HOW DO THESE ELEMENTS COMBINE? As proved in modern chemistry, the actual cause behind the combination of elements is its inner structure. Every atom is formed by a number of particles. Atoms consist of a nucleus which contains neutrons and

protons around which electrons revolve. Neutrons are neutral whereas protons are positively charged and electrons are negatively charged. Neutrons and protons combined within the nucleus and are responsible for the atomic characteristics which is known as *Surat-i-Naw'iyah* i.e. it is nucleus which is responsible for the properties exhibited by an atom, that are characteristically different for every atom. And the electrons that revolve around the nucleus in the outer shell are responsible for the chemical combination of that atom. The numbers of electrons in each atom are different. For an atom to be chemically stable there should be two or eight electrons in its outer shell. If the number of electrons in the outer shell differs, the atom becomes chemically reactive or chemically unstable. This leads to the combination of an atom with another atom/s so as to achieve chemical stability. When the number of electrons in the outer shell becomes eight by sharing the electrons of another atom, it becomes chemically stable. [8] For example sodium has eighteen electrons and chlorine has seventeen electrons. In the outermost shell, sodium has one electron and chlorine has seven, hence they are chemically unstable. When sodium and chlorine atoms come together to form sodium chloride (NaCl), they transfer an electron. The sodium (Na) atom transfers one electron to the chlorine (Cl) atom, in order to attain complete octet. Therefore after chemical combination, they both have eight electrons in the outermost shell making them stable. [11] From expression of this example, we may analyze the definition given by *Ibn Sīnā*as follows: Na and Cl both are elements i.e. *Anāṣir*. They combine with each other by virtue of their *electronic configuration* forming a compound i.e. NaCl.

As stated in *Ṭibb*, causes of *Imtizāj* (chemical combination) are:

1. *UlfatKīmiyāwiyya*(Chemical affinity) which depends on electro valency of the elements, which denotes their tendency to combine chemically.
2. *NafratKīmiyāwiyya* (Chemical repulsion) which is possessed by the elements that are chemically stable and does not undergo chemical combination. [12]

WAYS OF *ULFAT KĪMIYĀWIYYA* (CHEMICAL AFFINITY)-HISTORY AND TYPES: Early speculations about the nature of the chemical bond, from as early as the 12th century, supposed that certain types of chemical species were joined by a type of chemical affinity. In 1704, Sir Isaac Newton famously outlined his atomic bonding theory. In 1819, on the heels of the invention of the voltaic pile, JönsJakob Berzelius developed a theory of chemical combination stressing the electronegative and electropositive characters of the combining atoms. [13] By the mid-19thcentury, Edward Frankland, F.A. Kekulé, A.S. Couper, Alexander Butlerov, and Hermann Kolbe, developed the theory of valency, originally called "combining power". [14] In 1916, chemist Gilbert N. Lewis developed the concept of the electron-pair bond, in which two atoms may share one to six electrons, thus forming the single electron bond, a single bond, a double bond, or a triple bond. [15] That same year, Walther Kossel assumed complete transfers of electrons between atoms, and was thus gave a model of ionic bonding. Niels Bohr proposed a model of the atom and a model of the chemical bond. According to his model for a diatomic molecule, the electrons of the atoms of the molecule form a rotating ring whose plane is perpendicular to the axis of the molecule and equidistant from the atomic nuclei. The Bohr model of the chemical bond took into account the Coulomb repulsion - the electrons in the ring are at the maximum distance from each other. In 1927, the first mathematically complete quantum description of a simple chemical bond, i.e. that produced by one electron in the hydrogen molecular ion, H_2^+, was derived by the Danish physicist OyvindBurrau. [16]

A chemical bond is an attraction between atoms. In the simplest view of a

covalent bond, one or more electrons (often a pair of electrons) are drawn into the space between the two atomic nuclei. Energy is released by bond formation. The release of energy (and hence stability of the bond) arises from the reduction in kinetic energy due to each electron being confined closer to its respective nucleus. Covalent bonds often result in the formation of small collections of better-connected atoms called molecules. When covalent bonds link long chains of atoms in large molecules, then the structures that result may be both strong and tough. Also, the melting points of such covalent polymers and networks increase greatly. In a simplified view of an ionic bond, the bonding electron is not shared at all, but transferred. In this type of bond, the outer atomic orbital of one atom has a vacancy which allows the addition of one or more electrons. These newly added electrons potentially occupy a lower energy-state (effectively closer to more nuclear charge) than they experience in a different atom. Thus, one nucleus offers a more tightly bound position to an electron than does another nucleus, with the result that one atom may transfer an electron to the other. This transfer causes one atom to assume a net positive charge, and the other to assume a net negative charge. Ionic bonds are strong (and thus ionic substances require high temperatures to melt) but also brittle, since the forces between ions are short-range and do not easily bridge cracks and fractures. A less often mentioned type of bonding is metallic bonding. In this type of bonding, each atom in a metal donates one or more electrons to a "sea" of electrons that reside between many metal atoms. In this sea, each electron is free (by virtue of its wave nature) to be associated with a great many atoms at once. The bond results because the metal atoms become somewhat positively charged due to loss of their electrons while the electrons remain attracted to many atoms, without being part of any given atom. This type of bonding is often very strong (resulting in the tensile strength of metals). The sea of electrons in metallic bonding causes the characteristically good electrical and thermal conductivity of metals, and also their "shiny" reflection of most frequencies of white light. [17-19]

Further, *Ibn Sīnā* said, when these components interact among themselves by virtue of their respective powers (qualities), a condition is produced, which is found in equal proportion in all components of the elements; this is called temperament. From this, he means that after chemical combination whatever compound has been formed, is an altogether new compound having different properties and it does not reflect its elemental form but a new form and reflects a new quality which is constant throughout the compound.

CONCEPT OF QUANTITATIVE TEMPERAMENT-ACRITICAL ANALYSIS: The qualitative concept of temperament, i.e. the temperament is produced by the interaction of qualities, which was given by Unani scholars in the past, without any exception, is still prevalent. But this qualitative concept of temperament is not the only cause behind the temperament. Temperament is determined by the elements, qualitatively as well as quantitatively. It is not only quality that determines the temperament but also the quantity and the proportion by which the elements combines that also results in alteration of the quality to form the temperament. Here, from quality, we understand the individuality of elements i.e. every element is distinct from another element and has distinct qualities or properties. In past, which was considered to be quality of elements in the formation of compounds has now proved to be the atomic structure of elements. And by quantity, we understand the number of atoms that take part in the chemical bonding. The interaction of elements and the formation of compounds could not be explained then but now it is fully known from chemistry, how compounds are formed by interaction of elements with each other. Therefore, we should stick to the theory of chemical

combination in understanding temperament as it is more logical. [8]

QUALITIES IN CONTEXT OF TEMPERAMENT: Qualities are nothing but indicative of elemental temperament i.e. the atomic structure which makes every element discrete from another. When a person is said to be of hot temperament, it doesn't mean that hot quality is dominant over the other qualities, it rather means that fiery elements are dominant over the other constituents of body. Similarly, cold temperament is indicative of dominance of earthy elements. Moist temperament and dry temperaments are related to dominance of watery elements and airy elements respectively in a similar way. Therefore, sensual existence of qualities in elements is more acceptable. [8]

TEMPERAMENT AND HUMORS: The humoral interpretation of temperament as it is perceived is also related to elements. When a person is said to be of bilious temperament, it indicates the dominance of yellow bile in the body and hence, is indicative of dominance of fiery elements in the body which is manifested in the form of excessive bile. Similarly, phlegmatic temperament indicates the dominance of phlegm and hence moist elements. Sanguine and melancholic temperaments can be related to airy and earthy elements respectively in the same way. Therefore, humoral preponderance is also indicative of elemental composition in the body. This can also be proved by the following example. Unani scholars say that humors are produced according to the specific temperament of the body. Say, bile is produced more in the body whose temperament is hot and dry. That is quite valid to an extent as humors are produced from diet which comprises of plants, and plants are constituted by elements. This is in the favor of elemental concept of temperament rather than humoral concept. [8]

ROLE OF DIET IN TEMPERAMENT: Humors are produced by foods after their ingestion in the stomach and passage through the digestive tract into the liver where humors are actually produced. It means that if the diet of a person is changed his temperament would automatically change. *Al-Rāzī* says, "Age, dwelling and diet play a very important role in change of temperament". He further added, "Diet has a major share in the formation of temperament. The diet and sleep in adequate quantity produce moistness in the temperament, and its opposite measures create dryness". [20]

The reason behind this notion is that the Unani physicians have not made any distinction between the natural and unnatural qualities. The unnatural qualities in the body are produced due to certain physiological disturbances, some environmental factors and/or psychological disorders. Certainly the unnatural qualities whether increased cold, moistness or dryness, can be changed and corrected with the help of suitable diet, agreeable dwelling and appropriate climate, but real and natural temperament can never be altered.

DISCUSSION

Basically, temperament can be perceived as the final combination of elements (*Usṭuqussāt*). We can also state that temperament depends upon the number, ratio and atomic sequence of elements in the compounds. The properties of a compound differ from the properties of elements. The compounds retain their properties until their elemental form is held together, but when chemical combination or chemical disintegration occurs, the properties of the compounds are also affected in proportion to the chemical combination or disintegration. This applies to human temperament as well. Anything that exists, possess *physical* as well as *chemical* properties. Therefore, temperament is basically the atomic structure that leads to formation or breakdown of a compound and changes accordingly, and is responsible for the chemical properties that are contained by that compound. [8] So, the temperament is chemical property (or composition) of a

compound and if we talk about the temperament of human beings it can be described biochemically. The definition temperament as described by Unani scholars in the past, if perceived in the light of technological advancements which were lacking at that time when it was given, can be logically understood as:

"Temperament is formed as a result of chemical process in which two or more elements are bonded together by different types of chemical bonds according to their valencies and affinity towards each other to form a new compound that have uniform properties throughout."

CONCLUSION

The role of qualities of elements, and humors, and diet in the formation of temperament as described by Unani physicians, are indirectly related to the role of elements in the formation of temperament; as humors and diet both are formed by elements as well and qualities of elements here is an indicative of the atomic structure.

REFERENCES

1. Gruner OC. A Treatise on the canon of Medicine of Avicenna. London: AMS Press;1930. Page number 29-30.
2. Shah MH. Temperament- Explanation and Interpretation, Philosophy of Medicine and Science- Problems and Perspective, Compiled By Department Of Philosophy of Medicine and Science. New Delhi: IHMMR; 1972. Page number 123-128.
3. Taiyab M. Philosophy of Greco-Arabian Medicine. Aligarh: A.M.U. Press;1983. Page number 24.
4. Galen. KitabFilAnasir, Edited and Translated by Rehman Z. Aligarh: International Printing Press; 2008. Page number 99-100.
5. Majoosi AIA. Kamilus Sana, Urdu Translation by Kantoori GH. New Delhi: IdaraKitab-Us-Shifa; 2010.Pagenumber 24, 25, 42, 45, 46, 110, 190, and 191.
6. Masihi AS. Kitab Al Meyat Fit Tib. Part-1. Hyderabad: Islamic Publication Society;1963. Page number 82, 98.
7. Sina I. Al QanoonFilTibb, Book-1, English Translation of The Critical Arabic Text. New Delhi: JamiaHamdard;1993.Page number 7-13, 65, 190-197.
8. AzmiAA. Basic Concepts of Unani Medicine – A Critical Study. New Delhi: JamiaHamdard; 1995.Page number 57-59, 73-79.
9. Periodic table [Internet]. Available from: https://www.chemicool.com/m/periodic-table.png
10. Periodic table [Internet]. [Updated2019 Feb. 9]. Available from: https://en.wikipedia.org/wiki/Periodic_table.
11. Ayush Shukla. How can one show the formation of NaCl from sodium and chlorine atoms by the transfer of electrons? [Internet]. Available from:https://www.quora.com/How-can-one-show-the-formation-of-NaCl-from-sodium-and-chlorine-atoms-by-the-transfer-of-electrons.
12. Ahmad SI. Al Umur Al Tabiyah. New Delhi: Saini Printers; 1980. Page number 16-18, 27-40, 53-63, 143.
13. Russell CA. The History of Valency. Leicester: Leicester University Press; 1971.
14. Sutcliffe BT. The development of the idea of the chemical bond [Internet]. 1996. Available from: https://doi.org/10.1002/(SICI)1097-461X(1996)58:6<645::AID-QUA7>3.0.CO;2-Y
15. Lewis GN. Valence and the Structure of Atoms and Molecules. New York: Chemical Catalog Co.; 1923.
16. Urooj B., Temperament (peerless key factor of Umoor-e-Badan): Definitions, Chemistry and Biochemistry. JETIR. 2018; 5(3): 881-883.
17. Locke W. Introduction to Molecular Orbital Theory [Internet]. 1997 [Updated 2005 May 18]. Available from: https://www.chemistry.tcd.ie/assets/pdf/sfchemistry/Molecular_Orbital_Theory.pdf
18. Nave, Carl R. HyperPhysics [Internet]. 2005 [Updated 2005 May 18]. Available from: http://hyperphysics.phy-astr.gsu.edu/hbase/hframe.html
19. Chemical bond. [Updated 2017 Feb. 8] Available from: http://www.newworldencyclopedia.org/entry/Chemical_bond
20. Razi.Kitab Al-Mansoori Urdu Translation. CCRUM, New Delhi: CCRUM; 1991. Page number 71-72.

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