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REVIEW ARTICLE

UNANI CONCEPT OF *TABIYAT* (PHYSIC/NATURE) AND ITS IMPORTANCE IN THE REGULATION OF HOMEOSTASIS IN HUMAN BODY- A REVIEW

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ABSTRACT

Unani system of medicine is one of the ancient systems of medicine which is providing wellness to the mankind. The concepts of this system are very rational and logical. The concept of *Tabiyat* which is related to the body is providing the legend knowledge as pioneer to understand the human physiology. *Tabiyat* (nature) of the body is known as supreme planner which takes part in every physiological function. Its importance in the human has been corroborated by Unani philosophers in very explanatory and comprehensive way. There are seven factors which considered under the *Tabiyat* are *Arkan* (four basic constituents), *Mizaj* (temperament), *Akhlat* (humors), *Aza* (organs), *Arwah* (pneuma), *Quwa* (energy) and *Afal* (functions).

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INTRODUCTION

Existence of phenomenon of life is only on the earth. As it knows up to great level of faith that living organisms came to exist in a very similar way from bacteria to human beings. (Lurquin, 2003) In ancient era it was imagined that the origin of life came into existence from bamboos to aphids spontaneously, flies from mud and sweat and production of worms from dirt of canals. (Brack, 1998) Later on Roman and Greek philosophers attempted to solve this issue somehow and proposed that life was intrinsic to matter; and came out according to favorable conditions. Unani philosophers proposed that, in this universe, everything is created from *Arkān Arba'a* (four basic constituents) i.e. *Nār* (fire), *Hawā* (air), *Mā'* (water) and *Arḍ* (earth). They affirmed that it cannot be divided further into parts having different characteristics in respect of structure and function; therefore it is called as *Mufrad/Baseet* (simple). (Majoosi, 2010; Jurjani, 2010; Ibn Sina, 2010; Qarshi, 2010; Anonymous, 2009; Chandpuri, 1998) So everything is having the properties of four basic constituents. Unani physicians explicated the term *Tabiyat* (physic) and its role in the maintenance of health clearly.

Hippocrate said that *Tabiyat* (physic) is a managing power which works for the welfare of human body involuntarily and unconsciously and is a source of all motion and rest. (Tabri MAA, YNM) *Tabiyat* is considered as the supreme planner of our body, it is the practical definition. (Tabri R, 2002) Ibn Nafis said in other words "*Tabiyat*" is a power which when found in a natural body itself becomes the first source for its motion and rest". (Nafis I, YNM)

What is *Tabiyat* (physic)?

In the West, generally Aristotle (384-322 BCE) is credited for the proposal of the tradition of logic and development of early physics. He suggested four different informative principles or factors in his physics: (i) the material cause is the basic substance to make the everything; (ii) the formal cause is the pattern in conventionality with which the materials are set up; (iii) for the production of the thing force is the responsible as a proficient cause; and (iv) the final cause is the end purpose for which a thing exists. Aristotle believed that the four causes are essential in the existence and nature of all things. (Kak S, 2008) Razi said the *Tabiyat* is solely responsible for the performance of all physiological functions (*Afal-e-Tabiyah*) whether it is nutritional requirement of the body, or replacement of what is lost after *Istehala*. It excretes the waste products. Translocation of harmful matter from vital organs to the lesser organs

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or outside of the body and adjustment of temperament (Homeostasis) according to the internal environmental demand is the very important function of the *Tabiyat*. It capacitates the body to resist the diseases and pathogens. In moderate condition usually *Tabiyat* does not need any help of physician to restore health (Razi, 2000). In "Al-Miat" Masihi stated that *Tabiyat* which governs the body involuntarily. *Tabiyat* is the power which takes suitable action in the body to maintain the health. In most of the cases, *Tabiyat* gradually overcomes chronic diseases, where as sometimes it becomes perplexed and powerless (Masihi, 2008). Majusi stated that, the *Tabiyat* has been provided capacity to avert (turn away) injurious matter from one organ to other and transforms them to expel out of the body (Majoosi, 2010). "Ibn-e-Sina" said in "Al-Qanoon-Fil-Tib" the *Tabiyat-e- Insaniyah* (human physic) provides the capacity to resist the diseases and to make a defensive line against the *Madda -e-Marz* (Disease causing matter).

When the human body is exposed to *Madda -e-Marz* (vicious matter), *Tabiyat* takes on *Madda-e-Marz* until it overcomes the disease or becomes perplexed itself. In last stage of fighting between *Tabiyat* and *Madda-e-Marz* get intensified and domination of one on other appears (Ibn Sina, 2010). Greek physicians proposed some basic factors which are necessary for the maintenance of human physic/nature called as *Umoor-e-Tabiyah*- i.e. *Arkan* (four basic constituents), *Mizaj* (temperament), *Akhlat* (humors), *Aza* (organs), *Arwah* (pneuma), *Quwa* (energy), *Afal* (function/action). These *Umoor-e-Tabiyah* deals with the physic/nature of the body. These are responsible for the existence and maintenance of physiological functions of the body. So, derangement of anyone of these constituents may cause even death of an individual (Baghdadi, 2004; Chandpuri, 1998).

***Tabiyat* (physic) in Present Era**

Aristotle stated Physics is the knowledge of whatever the Greeks called 'phusis' (or 'physis'), a word which is termed as 'nature', the 'nature' of a thing, he said, is its end, for the purpose of which it subsists. More or less things are existing by nature and some from other factors. Animals, plants, and simple bodies (elements) have an internal principle of motion which includes change of quality or of size. (Russel, 1945) *Haiwanat* (animals) necessarily undergoes physical changes, and some of them increase and some decrease, and there is natural sequence of changes in the body (Peck, 1961). Physic does not conduct the final cause and it is determined by the action and movement; and called as first mover for which is the nature of the end. It deals with the subject who is having a principle of motion in themselves; (Ross WD, YNM) Democritus has doctored the theme of movement as nature of matter and therefore belonging to it all time. (Guthrie WKC, 1969) Albert Schweitzer proposed that each patient does have his own doctor inside himself and chance should be given to do work. (quotenik.com/tag/doctor/ cited on 16/06/2015) Hence, in Unani literature it is said that in the body *Tabiyat* is itself doctor and physician helps it only to cure any ailment. With above discourse one can infer here that the nature or physic of the body is responsible for each and every phenomenon in the body. *Tabiyat* takes part in the maintenance of all physiological functions with the help of *Quwa* (energy) of different faculties

like *Quwat-e-Tabiya* (physical faculty), *Quwat-e-Haiwaniya* (vital faculty) and *Quwat-e-Nafsaniya* (nervous faculty) (Shah MH, 2007).

Role of *Tabiyat* in Transport through cell membrane and Homeostasis

Some factors which are responsible for homeostasis one of them is active transport, where, the movement of substances is against the chemical or electrical or electrochemical gradient. It requires energy from ATP. (Sembulingam *et al.*, 2012; Hall, 2011) Osmosis (Greek word) is also a important factor for homeostasis, it occurs whenever there is difference in the solute concentration on either side of the membrane, (Sembulingam *et al.*, 2012; Hall, 2011; Satyanarayana *et al.*, 2013) or flowing of liquid from dilute to concentrated solution spontaneously, (Deb, 2002) in most of cells, osmosis is important factor for cell life, (Nelson, Cox, 2007) if concentration difference becomes negligible then osmosis stops. The homeostasis in the body includes three components sensors, transmission of the message to control center and transmission of message from the control center to the effectors for correction. (Sembulingam *et al.*, 2012) Hence, here one can account the role of *Tabiyat/nature* which is responsible for movement and rest with the help of *Quwa* (energy/ATP) Razi said the *Tabiyat* is responsible for the nutritional requirement of the body. (Razi, 2000) Regarding this, the adequate amount of nutrition must be supplied to the cell for various functions of the cell and growth of tissues, (Sembulingam *et al.*, 2012) so here *Tabiyat* takes part as a regulator for the maintenance of nutritional supply. Homeostasis is a Greek word means "staying the same".

(msichicago.org/fileadmin/Education/learninglabs/lab_downloads/Homeostasis.pdf, cited on 04/06/2015) It maintains the internal environment of body. There are automatic control systems in the body which uphold the certain state of temperature and water levels, which are essential for proper functioning of the cell. (kscience.co.uk/resources/ks4/21cscience/b4/specification.pdf, cited on 04/06/2015) Homeostasis concerns to the ability of body to adjust the physiology as internal environment in response to variations in the outer environment and the atmospheric condition. Some organs like liver, kidneys, brain and endocrine system help to maintain homeostasis, (saylor.org/site/wp-content/uploads/2010/11/Wiki-Human-homeostasis.pdf, cited on 04/06/2015; assets.cambridge.org/97805218/45182/excerpt/9780521845182_excerpt.pdf, cited on 04/06/2015) therefore, legend Unani philosopher Masihi stated that *Tabiyat* is the power, which takes suitable action in the body to maintain the health, (Masihi, 2008) like acid base balance is the essential phenomenon for the homeostasis in the body. Acids are produced in the body continuously and it is balanced by the production of bases. Regulation of total body iron is held almost equally under normal physiological conditions. (Sembulingam *et al.*, 2012) Kidneys maintain constant ion concentration, and nutrition is provided by the gastrointestinal system. (Hall, 2011) Razi explicated the important function of *Tabiyat/nature* is the excretion of waste products from the body. (Razi, 2000) *Tabiyat* maintains the homeostasis by the help of excretion process through kidneys for instances excretion of urea, uric acid, creatinine, bilirubin and other

chemical products like toxins, drugs, heavy metals and pesticides etc. (Sembulingam *et al.*, 2012) Instead of these, kidney maintains the acid base balance (saylor.org/site/wp-content/uploads/2010/11/Wiki-Human-homeostasis.pdf, cited on 04/06/2015; Murray *et al.*, 2006; Satyanarayana *et al.*, 2013) as well as electrolyte and water balance. (Sembulingam *et al.*, 2012) Kidneys eliminate approximately 50-150 mEq of the inorganic acids. (Deb, 2002) Likewise *Tabiyat* also plays key role in the excretion of waste product of gastrointestinal tract. Large intestine excretes out the heavy metals through feces. (Sembulingam *et al.*, 2012) Greek philosophers explained that the *Tabiyat* removes the waste from the body with the help of *Quwat-e-Dafiya* (evacuative faculty). Another important mechanism of *Tabiyat* (nature) in the body is the adaptation of great climatic diversity, including hot wet and hot dry. To deal with these climates, humans have acquired physiological and cultural manners of adjustment. (saylor.org/site/wp-content/uploads/2010/11/Wiki-Human-homeostasis.pdf, cited on 04/06/2015) One can infer here that this adaptation is due to *Tabiyat* of that particular person. Likewise, if there is too much carbon dioxide in the blood, it causes the blood to become acidic and therefore to overcome this condition, there is more frequent and deeper respiration (hyperventilation). (saylor.org/site/wp-content/uploads/2010/11/Wiki-Human-homeostasis.pdf, cited on 04/06/2015; Satyanarayana *et al.*, 2013; Nelson *et al.*, 2007; Hall, 2011) to maintain the internal environment.

Feedback Mechanisms

Legend philosopher and physician 'Rabban Tabri' author of book "Paradise of Wisdom", explained the *Tabiyat* in term of supreme planner of the body to manage everything. (Tabri, 2002) So it involves the feedback mechanisms too. Feedback is a phenomenon in which resubmission of some amount of output signal of a system to the input, takes place. (Sembulingam *et al.*, 2012) Importance of feedback mechanism is to recover the baseline. It preserves the cell organelles and sources of energy (ATP). (outreach.mcb.harvard.edu/teachers/summer09/karyncoulon/homeostasis.pdf, cited on 04/06/2015) Negative feedback mechanism controls the system of the body mostly. (Hall, 2011) In negative feedback circuit, when the brain gets impulses about an alteration or deviation in the inner conditions of the body, it transmitted signals by nerves. These signals immediate the alterations in the functions that rectify the differences and bring the conditions back towards the normal range. (Khaled *et al.*, 2011; Taniguchi *et al.*, 2007) *Tabiyat* maintains overall feedback functions of the body. One more very important mechanism of negative feedback is thermoregulation. During rising of body temperature or falling; skin receptors and the hypothalamus sense an alteration occurs, activates a command of brain. Hence, a consequence of this command causes the correct response and decreases the body temperature. (saylor.org/site/wp-content/uploads/2010/11/Homeostasis-Overview.pdf, cited on 04/06/2015) It is also under consideration of *Afal Tabiyat* (body physiology) to regulate the *Badani Harart* (body temperature) said by Unani scholars. Secondly, Blood pressure regulation is the best example of a negative feedback mechanism. (Khaled *et al.*, 2011; Kubota *et al.*, 2009) In arterial blood pressure regulation, a high pressure induces serial reactions that cause a lowered pressure, and in low pressure condition, it causes reactions that

elevate pressure. In both conditions there is negative feedback effect. (Hall, 2011) Positive feedback is a response to exaggerate the alteration in the variable. It does not have effect in homeostasis due to its destabilizing characteristic, thus, in physiological systems it is less common feedback mechanism, but it has its own importance for instances, in nervous system, a threshold electric potential makes more action potential, and blood clotting and childbirth are other types of this feedback. (saylor.org/site/wp-content/uploads/2010/11/Homeostasis-Overview.pdf, cited on 04/06/2015) Increased blood flow towards the injured area causes increased temperature, redness, swelling and pain these all are the characteristics of inflammation. This increased flow of blood enhances the deliverance of the white blood cells and cleansing of debris of injured and dead cells takes place. Additionally more availability of oxygen and nutrition to cells at the site of damage comes into existence and alleviates the remotion of waste products and poisonous substance. (Khaled *et al.*, 2011; Timothy, 2007) In Unani system of medicine *Waram* (inflammation) is the phenomenon of *Tabiyat* to protect the extension of infection.

One of the most important positive feedback mechanisms is the mechanism of ejection of milk and parturition. (Sembulingam *et al.*, 2012) At the time of delivery; the stretched cervix produces sensory impulses goes towards the hypothalamus, in hypothalamus, due to this, there is stimulation of posterior pituitary to secrete oxytocin. Oxytocin develops more powerful contractions in uterus that is why fetus is moved down more forcefully towards the cervix, and it induces more secretion of oxytocin and positive feedback cycle continues. (Khaled *et al.*, 2011; Chibbar *et al.*, 1993; Hall, 2011) Here, Unani concept of *Quwat-e-Dafiya* (eliminating faculty) can be accounted because this is mentioned in Unani classical text that this faculty is responsible for such type of mechanism.

Conclusion

Here one can easily conclude the above discussion about concept of *Tabiyat* (physic) owing to its importance and role in maintenance of human physiology. The feedback mechanisms can also be described by this concept of Unani medicine. In present scientific era, the scholars can be benefitted by great, rational and logical statements of ancient Greek philosophers to achieve the aim. So, this review paper may be helpful for further research to develop the scientific knowledge in the concerned field.

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