

Research Article

Unani Concept of Development of Aza-E-Mufridah - A Comparative Study

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Abstract The aim and objective of this article is to take the present-day person to the ancient time of Unani scholars, what they said about the embryological development of Aza-e-mufridah without modern day gadgets and laboratories and compare it with modern science. Since eternity man has always wanted to understand and probe nature from and when creation began and his purpose in this world the inquisitive man sought the help of generalizations, nature, old` manuscripts sometimes even the prophesies of saints and above all religions. In ancient time when people had no interest in inventions and discoveries except making gauntlets and swords to wage wars and few affluent families were traders in that surroundings we do not expect someone to have high tech labs and for that matter study abortion and specimens to inform mankind about the various stages of intrauterine life which modern day scientist came to know only few decades back.

Keywords *Aza-e-mufridah; Intrauterine life; Unani*

1. Introduction

The search for knowledge began since the Adam reached to this planet, no matter whether the tools & techniques were available or not. Since eternity man has always wanted to understand and probe nature from and when creation began and his purpose in this world, the inquisitive man sought the help of generalizations, nature, old` manuscripts sometimes even the prophesies of saints and above all religions. The literature of Unani medicine revealed that it was the observations of Unani scholars which made them successful physicians & philosophers. Their observation was at such an altitude which became the basis for further researches, inventions and discoveries. Even the concept of modern embryology and formation of Aza-e-mufridah also set about through them.

Likewise, a hoard of knowledge regarding embryology and formation of Aza-e-mufridah is available in Unani classical text. Unani physicians divides the Aza into two types (Uddin, 1930):

- Aza-e-mufridah (Simple members) / Aza-e-mutashabihul ajza / Aza-e-baseeta
- Aza-e-murakkaba (Compound members) / Aza-e-Aalia

Aza-e-mufirdah / Simple members are those organs whose structure is homogenous throughout, so that their names describe them in all part. For e.g. flesh, bones etc. (Ibne Sina, 2010).

However, Aza-e-murakkaba / Compound organs are those organs whose structure is not homogenous throughout, so that their names do not describe them in all part (Maseehi, 2008).

In the light of above definitions, we can say that the Aza-e-Mufridah are tissues which is homogeneous throughout; it is further differentiated into organs.

Tissue is defined as the group of cells having similar function. There are many types of tissues in the body. All the tissues are classified into four major types which are called the primary tissues. The primary tissues include:

- Muscular tissues: skeletal muscle, smooth muscle and cardiac muscle.
- Nervous tissues: neuron and supporting cell.
- Epithelial tissues: squamous, columnar, cuboidal cells and epithelial cells.
- Connective tissues: Connective tissues proper, cartilage, bone and blood.

Concept of Development of Aza-e-mufridah in Unani System of Medicine

According to Ibne Rushd, all Aza-e-mufirdah are formed of four Arkan i.e. water, air, earth and fire. These Arkan came together to form Aza-e-mufridah (simple members) through tabakh and tabakh takes place through heat, that's why all Aza-e-mufirdah have all the four qualities of Arkan-e-arba i.e. hot, cold, wet & dry. Ibne Rushd further explained two different ways of admixture of Arkan-e-arba. First, where the quantity of all Arkan are equal. Such type of admixture is known as Moatadil bil izafat ilal itraf.

Second, where the quantity of all four Arkan varies. This is the reason why one specie differs from other. For e.g. Horse and human, formed through the same Arkan but to varying degree of their admixture, forms two different species. Similarly, degree of admixture of Arkan in human body defines different temperament of different organs. These temperament for Aza-e-mufridah came into existence either through first tarkeeb or initial formation of Arkan-e-arba or through second tarkeeb of Arkan-e-arba. Ibne Rushd supports the second tarkeeb for the formation of Aza-e-mufridah. He further stated that Aza-e-mufridah possess the same properties that are formed by the admixture of arkan. On the basis of above discussion, Ibne Rushd defines nine types of temperament for Aza-e-mufridah i.e. hot, cold, wet, dry, hot & wet, hot & dry, cold & wet, cold & dry, moatadil. However, moatadil temperament does not exist. Because it's impossible to have an equal quantity of arkan throughout in the formation of Aza-e-mufridah. He explained that for the formation of any Azu the quantity of water and earth is required more than fire and air. Earth and water from the qiwam for any azu. Therefore, any organ cannot be moatadil in its quantity. But can be considered moatadil in its quality. For e.g. Jaleenoos has described the tip of the finger of human hand to be the most moatadil in temperament. Hence, it is concluded that the temperament of Aza-e-mufridah can be among one of the nine temperament This temperament of Aza-e-mufridah is considered to be moatadil according to its action and reaction. The same temperament is considered to be moatadil according to its race (Nau) (Ahmad, 1980).

According to Rabban tabri, human survival is based on Arkan-e-arba. He derives respiratory gases from atmosphere, drinks water, eats fruits, vegetables, grains etc. that consist of earthy and fire constituents. The constituents of these Arkan after metabolism form humors inside body. For e.g. Phlegm is derived from the liquid part of the diet, blood from pneuma, bile from the part of fire and black bile from earthy constituents. Food is formed through these four arkan and all four temperament

are formed from this food. Aza-e-mufirdah are formed through these four temperaments (Hkm Syed Kamal, 2005).

According to some of the present Unani scholars, the action & reaction and combination (imtizaj) of basic component (Ajzae Aulia) of Mawaleed-e-salasa form biological biomolecules (uzvi murakkabat) and the combination of these biomolecules results in the formation of Aza-e-Daqeeqa and further combination of these Aza-e-daqqeeqa results Aza-e-mufridah and then Aza-e-Murakkaba and finally the formation of Human body takes place (Majoosi, 2010). Majoosi also described formation of Aza-e-mufridah through Arkan e arba which forms the four humors and Aza-e-mufridah are formed through these humors. The Aza-e-mufridah thus, formed from these four humors represent the same temperament as the humor possess. For e.g. Bone has cold and dry temperament that represents marrah sauda. Fat which is cold and wet represents phlegm. Flesh that are hot & wet represent blood. Majoosi & Hippocrates were of the same opinion for the formation of Aza-e-mufridah through four humors (Maseehi, 2008).

Ibne Rushd was of the view that that Aza-e-mufridah are formed through blood only and blood is formed through the diet and beverages we take. He denied the formation of Aza-e- mufridah through seminal fluid nor by marrah safra, marrah sauda or phlegm, it is the only blood that forms the matter for formation of azu. Blood is considered a mixture just like sikanjbeen which is comprised of honey, water and vinegar. Aza-e- mufridah are formed in uterus where by action marrah sauda is not present. Neither do the marrah safra present in blood at the time of tauleede azu. So, Aza-e-mufridah are not formed through these three humors except blood. However, phlegm is considered to be the maddae baeeda for azu. Because the organs formed through phlegm are actually formed via blood. But marrah safra and marrah sauda are not considered maddae qareeba nor maddae baeeda for the formation of any azu as their metabolism (Istehala) towards blood is not possible. However, these two humors (Safra and Suda) are present in blood by power (Bil quwa) and in case of any changes in the quantity or quality of blood then the metabolization of blood occurs towards these two humors that leads to diseases. He explained the confusion for maqamul haq (things which are mixed to blood) as it is not necessary that the things which are present in blood by power they are the matter for blood. Therefore, blood is considered to the matter as well as heola for the rest of the three humors (Qarshi, 2010).

During pregnancy, the solid earthy components of diet forms bone. Less thick and hard components form nerves. Soft components form flesh. However, hairs and nails are formed from those components of diet which are excreted by tabiyat. In fact, in breast milk all four arkan are present that are responsible for the growth of a child. In Buqrat's opinion, it is the dietary component after metabolism that forms different organs according to their consistency and properties. Further, he said that soft organs of the fetus are formed through soft dietary components and solid organs are formed through solid components of diet (Qarshi, 2010).

There are two concepts of the formation of Aza mufridah. One group including Abu sahl maseehi, is of the opinion that all organs are initially formed through the mani of male and female whereas their growth and development takes place through blood. The other group including Allama qarshi, is of the opinion that except Flesh (leham) and fat (shaham)/sameen, all organs are formed through mani.⁹ According to them flesh is derived from viscous blood (gaadha khoon/mutayyane dam) congealed by Hararat (hotness) & Yaboosat (dryness), they achieve consistency (iniqaad/bustugi) while fat/sameen are derived from the aquosity and unctuousity of blood (khoon ki chiknai), which has congealed by baroodat (coldness) and achieve consistency (iniqaad/bustugi). That's the reason why it get melts on (hararat) heating (Mohd. Unwan, 2005-06).

Allama Qarshi cited an example of Egg of a hen to explain his view, that moderate heat coagulates the egg white which resembles to flesh, formed through blood and solidify on heating. On the basis of above two group's opinion, aza are divided into two types:

- i. Aza-e-aslia
- ii. Aza-e-damvia

Aza-e-aslia are those organs which are formed through semen. On the other hand, Aza-e-damvia are formed through blood like flesh and fat.

Aza-e-aslia are initially formed through semen, their growth and development take place through hot uterine blood which during normal days excreted as menstrual blood (Ahmad, 1983). This shows that blood is a mixture that consist of humors through which different organs are formed (Rabban Tabri, 2010).

Types of Aza-e-mufridah (Mohd. Unwan, 2005-06)

Ibne Sina in his book *Al qanoon fittib* mentioned Aza-e- mufridah as the members of the body derived primarily from the commingling of the humors, just as the humors are derived primarily from the commingling of the arkan.

Aza are divided into two groups:

- I. Simple Members/Aza-e- mufridah/Aza-e-mutashabihul ajza/Aza-e- baseeta
- II. Compound Members/Aza-e- murakkaba/Aza-e-aalia

Simple members (elementary tissues) literary means homogenous and indivisible.

These are:

1. The bone: This is sufficiently hard to form the foundation of the body as a whole and provide the purchase needed for its movements.
2. The cartilage: Being softer than bone this can be bent and yet it is harder than all other members. It was made for the purpose of providing a cushion between hard and the soft membranes so that the latter should not be injured when exposed to fall or compression or a blow. In case of joints, it prevents the tissue from being torn by the hard bone. It gives a purchase for a muscle to obtain extension in places where there is no bone to give attachment or support (for e.g. flesh of the eyelids) and also gives attachment to flesh without being too hard for them (e.g. epiglottis).
3. The nerves: These are the structures arising from the brain or spinal cord. They are white, soft, pliant, and difficult to tear and were created to sub serve sensation & movement of the limbs.
4. The tendons: These form the terminations of the flesh. They resemble nerves in appearance. They are attached to movable membranes and when the flesh contract and relax the parts to which the tendons are attached move to and from. They may sometimes broaden when the flesh expands and then become narrow again on their own account lengthening and shortening apart from the lengthening and shortening of the muscle. Sometimes this is through the intervention of ligaments. The upper part of the flesh is called flesh that leaves the flesh and passes to the joint bringing the two closes together is the tendon.
5. The ligaments: These structures have the appearance and feel of nerves. They are of two kinds- true & false. The latter extends to the flesh and the former does not reach as far as muscle, but simply joints the two ends of the bones of a joint firmly together. This false ligament has not the

feel of ligament and is not painful when move or rubbed. The auxiliaries of the ligaments are the structures attached to them.

6. The arteries: These structures arise from the heart. They are hollow, elongated, fibrous, and of ligamentous consistency. Their movements consist in expansion and contraction, which distinguishes them from the veins. They were created in order to enable the heart to be ventilated, fuliginous vapors to be expelled from them and the breath distributed by their means to all parts of the body.
7. The veins: These resembles arteries except in so far as they arise from the liver and do not pulsate. Their purpose is to carry the blood away from all parts of the body.
8. The membranes: These structures are formed of extremely minute interwoven filaments which are extremely delicate. Their object is to form the external covering for the other structures and thereby preserves the form and outline of these structures and to support the members. By means of their fibers, they bind together the nerves and the ligament They holds the kidneys in position. By providing a sensitive covering they provide sensation to the members. For e.g. lungs liver, kidney, spleen they themselves are insensitive, distension due to flatus or inflammation can only be felt by the membranes over them that stretches and make us aware of the condition.
9. The flesh: Flesh includes flesh, fasciae, tendons, ligaments, connective tissues and so forth all together. Flesh is that which fills up the spaces left within the members thus, imparting firmness and solidity.

Majoosi in his book “Kamilussana” categorized simple members into seven types:

- a. Cartilage & Bones
- b. Ligaments & Tendons
- c. Veins
- d. Arteries
- e. Flesh, glands & fat
- f. Membranes & Skin
- g. Nails & hairs (Rabban Tabri, 2010)

Rhazi does not include arteries, veins, tendons and membranes into simple members. He stated that all these members are made of nerves and ligaments, then only the definition of simple i.e. those whose structure is homogenous throughout, so that their name describes them in all parts. Burhanuddin Nafees supporting the view of Rhazi, further explained that every simple member has its particular matter and soorat-e-nauyia that compels it to form a particular nau (specie). This soorat-e-nanuyia and matter is found in every part of simple members that's why there is no difference between the part or whole member. Soorat-e-nauyia can be defined as the one which form the structure of anything, which make it different from others (Ahmad, 1983).

Temperament of Simple Members (Ahmad, 1983)

Moatadil (Neutral) Jalenos considered fingertip of hand to be the most moatadil (neutral) in temperament.

Cold & Dry: Hairs > Bones > Cartilage > Tendons > Ligaments > Membranes > Nerves > Vessels

Order of coldness: Hairs > Bones > Cartilage > Ligaments > Tendons > Membranes > Vessels > Nerves

Order of dryness: Pneuma > Blood > Flesh

Order of Hot & wet members: Cold & Wet > Fat and Bone marrow

Table 1: Comparison between Modern and Unani concept of development of Aza-e-mufrida

Similarities	
Modern concept	Unani concept
<ul style="list-style-type: none"> ▪ Ovaries act as endocrine glands and secrete female sex hormones (estrogen and progesterone). Ovaries are controlled by another endocrine gland in the brain, the pituitary gland (hypophysis). In the first two weeks of a monthly cycle, pituitary gland secretes FSH. FSH triggers the ovaries to secrete estrogen and progesterone. Progesterone causes the uterine wall to grow thick. ▪ Estrogen and progesterone have a negative feedback on FSH and after a while they will suppress the secretion of FSH. In the mid-cycle (Day 14) FSH (and LH) level drops suddenly. This causes the estrogen and progesterone to drop suddenly. Suddenly progesterone withdrawal causes the shedding of uterine wall and the menstrual bleeding. Sudden drop of FSH and LH triggers ovulation too. If the woman gets pregnant around the mid-cycle, the fetus's placenta starts secreting Human Chorionic Gonadotropin (HCG). HCG causes the remnant of the ruptured follicle to start growing (and make the yellow body, corpus luteum) and start secreting progesterone. This will sustain the thickness of the uterine wall during the pregnancy and cause the periods to stop during pregnancy. 	<ul style="list-style-type: none"> ▪ During pregnancy, the blood which is otherwise discharged from the female at the time of menstruation become nutriment for the embryo and does not shed (Ibne Sina).
According to modern medical science One drop of semen is manufactured out of forty drops of blood. The two testes or seeds that are located in the scrotal bag are called secretory glands. The cells of these testes have been endowed with the peculiar property of secreting semen from the blood	Amshaz e badan: Those constituents and fluids that are extracted from organs come to blood and then get absorbed into testes through blood by the action of Quwwate jaziba. In the testes by the action of Quwwate mughairra, these components converted into semen. All organs are formed through the mani of male and female (Maseehi).
Fertilization takes place when the spermatozoon has successfully entered the ovum and the two sets of genetic material carried by the gametes fuse together, resulting in the zygote (a single diploid cell).	The process of admixture of male and female mani nowadays is known as fertilization.
Blastulation: The conceptus has reached the uterus. The blastocyst (mass of cell forms a hollow ball) attached itself to the endometrium, where it will implant.	Fetation said to behave like seeds sown in the ground (Arastu).
Formation of placenta: The placenta develops once the blastocyst is implanted, connecting the embryo to the uterine wall, allowing gas exchange and the transfer of nutrients to the embryo.	Rabban tabri, explained after fourteen days of fertilization a blood clot is formed which grows gradually and placenta is formed around that clot through which it respires and gets its nutrition.
Stage of gastrulation/Stage of differentiation: All the organs are formed through the three germ layers that are formed through a cell mass known as	According to some of present Unani scholars, the action and reaction and combination (imtizaj) of basic component (Ajzae Aulia) of Mawaleed salasa form biological

gastrula. However, the trophoblast first differentiates into an inner layer, the cytotrophoblast, and an outer layer, the syncytiotrophoblast. The cytotrophoblast contains cuboidal epithelial cells and is the source of dividing cells. The process of gastrulation reorganizes the two-layer embryo into a three-layer embryo, and also gives the embryo its specific head-to-tail, and front-to-back orientation. A primitive node (or primitive knot) forms in front of the primitive streak that induces the formation of the neural plate which serves as the basis for the nervous system. Formation of mesoderm takes place through the primitive pit. The epiblast moves into the primitive streak in an epithelial-mesenchymal transition; Epithelial cells become mesenchymal stem cells, multipotent stromal cells that can differentiate into various cell types. The hypoblast is pushed out of the way and goes on to form the amnion. The epiblast keeps moving and forms a second layer, the mesoderm. The epiblast has now differentiated into the three germ layers of the embryo, so that the bilaminar disc is now a trilaminar disc-the gastrula. The three germ layers are the ectoderm, mesoderm and endoderm, and are formed as three overlapping flat discs. It is from these three layers that all the structures and organs of the body will be derived through the processes of somitogenesis, histogenesis and organogenesis. The three germ layers are the ectoderm, mesoderm and endoderm, and are formed as three overlapping flat discs. It is from these three layers that all the structures and organs of the body will be derived through the processes of somitogenesis, histogenesis and organogenesis. The upper layer of ectoderm will give rise to the outermost layer of skin, central and peripheral nervous systems, eyes, inner ear, and many connective tissues. The middle layer of mesoderm will give rise to the heart and the beginning of the circulatory system as well as the bones, cartilage, tendons, dermis (skin), muscles and kidneys. The inner layer of endoderm will serve as the starting point for the development of the lungs, intestine, thyroid, pancreas and bladder.

Organs: In biology, an organ or viscous is a collection of tissues joined in a structural unit to serve a common function.

Tissue is defined as the group of cells having similar function. There are many types of tissues in the body All the tissues are classified into four major types which are differentiated through the three germinal layers and are called as the primary tissues. The primary tissues include.

- Muscular tissues: skeletal muscle, smooth muscle, and cardiac muscle.
- Nervous tissues: neuron and supporting cell.

biomolecules (uzvi murakkabat) and the combination of these biomolecules results in the formation of Azae Daqeeqa and further combination of these azae daqeeqa results Azae Mufridah and then Azae Murakkaba and finally the formation of Human body takes place. Aza e mufridah or the members of the body derived primarily from the commingling of the humors, just as the humors are derived primarily from the commingling of the arkan. According to Ibne Sina, mani of male and female combined to form forth/raghwa that lasts for 6-7 days. During these days, the forming power (Quwwate musavvira) produces changes in embryo without the help of womb of the mother. After 10 days, now with the help of womb of the mother, streaks/khutoot and nodes/nuqta are formed through that forth. At fifteenth day, formation & development of blood clot takes place. In next fifteen days, this clot develops into pieces of flesh that get thickened slowly. Brain, heart and liver gradually differentiated from these pieces of flesh. The formation of embryo completed in 40 days.

Aza: These are those solid substances which are formed through initial formation (Ibtidae tarkeeb) of good humors (Akhlate mehmooda) or from Ibtidae mijaz or from ratoobate sania. Likewise, humors are those liquid substances which are formed through initial formation of Arkan. Ratoobate sania is formed through initial formation of humors and aza are formed from that ratoobate sania.

In Unani medicine aza are divided into:

- Aza e mufirdah (Simple members)
- Aza e murakkaba (Compound organs)

- | | |
|---|--|
| <ul style="list-style-type: none"> ➤ Epithelial tissues: squamous, columnar, cuboidal cells and epithelial cells. ➤ Connective tissues: Connective tissues proper, cartilage, bone and blood. | <p>Aza e mufirdah/ Simple members are those organs whose structure is homogenous throughout, so that their names describe them in all part. For e.g. flesh, bones etc. because the part of flesh & bones have similar functions as that of whole organ.</p> <p>Aza e murakkaba/Compound organs are those organs whose structure is not homogenous throughout, so that their names do not describes them in all part.</p> |
|---|--|

Difference

But there was another side to the picture. Aristotle made one big mistake and here I do not refer to any matter of detail, in which it would not have been humanly possible to be more than very often right, but rather to general notions.

He was incorrect in his views that the male supplies nothing tangible to the female in the process of fertilization. To say that the semen gave the “form” to the inchoate matter of the menstrual blood was equivalent to saying that the seminal fluid carried nothing in it but simply an immaterial breath along with it. Aristotle did not, of course, envisage the existence of spermatozoa. According to him, embryo is formed from the combination of menstrual blood and semen of father.

2. Discussion

The study of Aza-e-mufirdah is the part of embryology, embryology is the science that deals with the formation and development of the embryo and fetus, can be traced back to the ancient Unani philosophers. This was so extraordinary phenomenon that it was almost disregarded until modern times. The embryologist of the 16th century was aware of the connection between the embryo and the maternal oviduct or uterus, a century later it was realized that this was for the nourishment of the embryo, and was in short, a true functional placenta. Yet for all that, Arastu's early discovery was over looked until 19th century. One must admit that there is something almost uncanny in the anticipation by Arastu, unequipped with tools and books, of a discovery remade a century ago by one of the leading physiologists of the nineteenth century. One could not expect Unani Scholars to discover all that; it was materially impossible them to do so; but is it not astounding that they came so close to the edge of the mystery, and- we must always insist on this - spoke of it in a sensible and quiet way.

References

- Uddin, K. 1930. Kulliyate Qanoon. Daftar Al Maseeh, Karol Bagh, New Delhi, pp.108-128.
- Ibne Sina, SRBA. 2010. Al Qanoon Fittib (Urdu translation by Kantoori GH). Idara-e-Kitab-us Shifa, New Delhi, p.35.
- Maseehi. 2008. Kitabul miat fit tib. CCRUM, New Delhi, 1, p.50.
- Ahmad, SI. 1980. Introduction to Al Umoor Al Tabiyah - Principles of Human physiology in Tibb. Saini printers, New Delhi, pp.142-145.
- Hkm Syed Kamal, UH. 2005. Usool e tibb. Idara Ishaat Tib., Lahore, 2005, pp.70-77.
- Majoosi, AHAIA. 2010. Kamilussana (Urdu translation by Gulam Hasnain Kantoori). Idara-e-Kitab-us Shifa, New Delhi, pp.60-70.
- Ahmad, SI. 1983. Kulliyate Usri. New Public Press, New Delhi, p.8.

Qarshi, AA. 2010. Ifada-e-Kabeer (Urdu translation by Kabeer Uddin). Idara-e-Kitab-us Shifa, New Delhi.

Mohd. Unwan, AQY. 2005-06. Tibbe Unani mai Ilme Junain Ka Tasawwur. Unimed, Kuliyat.

Rabban Tabri, AHABS. 2010. Firdausul Hikmat. Idara-e-Kitab-us Shifa, New Delhi, pp.42-51.

Mosby's Medical Dictionary. 2012. Germinal stage. 9th edition. Elsevier.

Nafees, B. 1954. Kuliyate-e-Nafeesi (Urdu translation by Kabeer Uddin). Idara-e-Kitab-us Shifa, New Delhi, pp.108-109, 153-157.

Ibne-e-sina. 2010. Al Qanoon fil Tibb, Urdu translation by Hkm Ghulam Hasnain Qantoori. Idara-e-Kitab-us Shifa, New Delhi, pp.1059-1064.

Tabri, R. 2010. Firdaus ul Hikmat fit Tib, Urdu translation by Hakeem Mohammad Awwal Shah Sambhali, Idara-e-Kitab us Shifa, New Delhi, pp.50-51.