Validation of the Mizāj of Heart by Determining The Ash Value of Vital Organs of Three Species

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ABSTRACT

This study aimed to determine the cause of Yābis attribution in the heart by estimating the ash value of three vital organs, such as heart, brain, and liver, of three species, chicken, goat, and buffalo. Creatures are composed of Arkān Arba'a in varied proportions, qualitatively and quantitatively most suitable for accomplishing their functions. Philosophers have described the structural and functional variabilities of species in terms of the Mizāj, which relates to its possible dominant Rukn. The Mizāj of human beings is described as the reflection of the Mizāj of their heart and the organs connected to it. The Mizāj of heart is attributed as Ḥārr-Yābis.

Twenty-seven samples of vital organs of three species, each obtained from market, were subjected to total ash value determination. The procedure was followed in accordance with the International Standard, ISO 936:1998(E).

The mean ash value of the chicken's heart, brain, and liver was 5.18%, 7.62%, and 6.56%, respectively. The mean ash value of the goat's heart, brain, and liver was 2.53%, 11.18% and 4.24%, respectively. The mean ash value in the buffalo's heart, brain, and liver was 5.32%, 8.74%, and 6.56%, respectively.

Interpretation and Conclusion: Yubūsat is required for hardness, stiffness, and durability to stay active and dynamic. Compared with the brain and liver, the heart's rigid nature, consistent action, and resemblance with the coniferous shape of Rukn Nār indicates the presence of Yubūsat Nāriyya. In this study, the least mean total ash value of the heart among all the three species implies the least presence of Ajzā' Arḍiyya, thus validating the presence of Yubūsat Nāriyya in it. Therefore, the heart's structure and function are in accordance with its Ḥarārat and Yubūsat Nāriyya.

Key words: Vital organs; heart; Yubūsat; Yubūsat Nāriyya; structure; function

INTRODUCTION

In Unani medicine, the Mizāj of an individual is nothing but a mere reflection of the Mizāj of heart and the organs connected to it (1). Moreover, the Mizāj of an individual organ is more important than that of the whole body (2). The Mizāj of the heart is attributed as Ḥārr-Yābis (hot-dry) (3–6).

Ibn Sīnā (980-1037 AD) states that the interaction of Arkān (Nār, Hawā', Mā' and Arḍ) with each other occurs in different proportions. When the mixture is in the right proportion, a substance is brought into existence physically, while any alteration to it causes that matter to get Fāsid (decomposed). The various orders of Mawālīd Thalatha depend on the intermixing of Arkān in desired proportion (3).

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Similarly, Zakria Razi (865-925 AD) believed that Mawālīd Thalatha (trimatters) disintegrates into Arkān on ignition. Rukn Nār, Rukn Hawā', and Rukn Mā' being Laṭīf (volatile) in nature turn into fumes, while Rukn Arḍ being Kathīf (non-volatile) remains as ash on incineration (7).

Philosophers believed that every species inherits a Mizāj, which is entirely the most appropriate and best adapted for the performance of its functions and passive states. In the case of human beings, they inherit the most befitting Mizāj possible of all in this world, as well as faculties corresponding to all the active and passive states of human. Each organ has also received the proper Mizāj requisite for its function. Some are made hotter with Rukn Nār or Rukn Hawā', some are made colder with Rukn Mā' or Rukn Arḍ, some are made moist with Rukn Mā' or Rukn Hawā', and others are comparatively dry with Rukn Nār or Rukn Arḍ in congruence to their natural needs. Thus, the Mizāj of organs influence the Mizāj of an individual as a whole (2–6).

Though philosophers have described the Mizāj of various organs, they have not explained the parameters of its quantification. They have attributed the Mizāj with respect to its obvious structure and function and in relation to its possible dominant Rukn. This attribution was solely based on logic and philosophy. Today, the interpretation and explanation of philosophy on the attribution of Mizāj is complex and obscure. So, the need was felt to have some analytical means by which subjective realities can be understood in terms of objective paradigm.

In this study, the focus was to determine the cause of Yubūsat in the heart, which could be due to the dominance of either Rukn Nār or Rukn Arḍ. So, the quantification of Rukn Arḍi, in terms of the ash value estimation, as a determinant of Yubūsat in three vital organs, namely the heart, brain, and liver, of three species, chicken, goat, and buffalo, was carried out.

MATERIAL AND METHODS

Fresh vital organs (heart, brain, and liver) of three species, chicken, goat, and buffalo, of either sex were taken from a poultry farm and some butcher shops of Bangalore for this study. The ash value was determined in accordance with the procedure established by the International Standard for determining the total ash in meat and meat products, including poultry with reference no. 'ISO 936: 1998(E)' (8).

Procedure

The aforementioned fresh vital organs of the three species were washed well and minced (mincer fitted with a plate with apertures not exceeding 4.0 mm in diameter was used for homogenizing the organs). The samples of each organ were first spread in the Petri dishes and placed in the drying oven at 105°C ± 5°C for 5 hours. Thereafter, the dried test samples were transferred to crucibles (flat-bottomed silica crucibles with inclined walls of height exceeding 25 mm) and placed in the muffle furnace at 550°C ± 25°C for 4 hours. After complete incineration, the muffle furnace was allowed to cool down and the ash samples were weighed.

The total ash content 'wa ' of the test samples was calculated using the following formula:

$w_a = (m_2 - m_0)/(m_1 - m_0) \times 100\%$

where m_0 is the mass of the empty crucible in grams, m_1 is the mass of the crucible with sample before incineration in grams, and m_2 is the mass of the crucible with ash after incineration in grams.

The same procedure was repeated thrice to calculate the mean percentage of mass of ashes for the hearts, brains, and livers of the three species. Attempts were made to keep the age and weight of the three species quite close. In this way, altogether 27 vital organs were obtained and subjected to analysis.

RESULTS

The mean percentage ash values of the vital organs in all the three species were calculated. The mean ash value of the chicken's heart, brain, and liver was found to be 5.18%, 7.62%, and 6.56%, respectively (Table 1). The mean ash value of the goat's heart, brain, and liver was found to be 2.53%, 11.18%, and 4.24% (Table 1). The mean ash value of the buffalo's heart, brain, and liver was found to be 5.32%, 8.74%, and 6.56%,

TABLE 1: Ash Values of the three vital organs

Species	Organ	Sample	Mass of the empty crucible in grams (*m*0)	Mass of the crucible with sample in grams (*m*1)	Sample mass (*m*1 -*m*0)	Mass of the crucible with ash in grams (*m*2)	Mass of the crucible with ash (-) mass of the empty crucible in grams (*m*2 – *m*0)	Mass fraction of ash in percentage (*wa*)	Mean Percentage
Chicken	Heart	Sample-1	22.587	23.603	1.016	22.643	0.056	5.511	5.18
		Sample-2	25.257	26.270	1.013	25.310	0.053	5.231	
		Sample-3	23.738	24.743	1.005	23.787	0.049	4.800	
	Brain	Sample-1	22.583	23.085	0.502	22.620	0.037	7.370	7.62
		Sample-2	23.807	24.313	0.506	23.846	0.039	7.707	
		Sample-3	23.738	24.239	0.501	23.777	0.039	7.784	
	Liver	Sample-1	22.047	26.060	4.013	22.306	0.259	6.454	6.56
		Sample-2	23.804	27.816	4.012	24.043	0.239	5.957	
		Sample-3	23.153	27.170	4.017	23.445	0.292	7.269	
Goat	Heart	Sample-1	22.047	26.067	4.014	22.150	0.103	2.566	2.53
		Sample-2	23.737	27.743	4.006	23.829	0.092	2.297	
		Sample-3	23.804	27.823	4.019	23.913	0.109	2.712	
	Brain	Sample-1	22.574	26.576	4.002	22.998	0.424	10.595	11.18
		Sample-2	25.247	29.250	4.003	25.711	0.464	11.591	
		Sample-3	22.048	26.052	4.004	22.502	0.454	11.339	
	Liver	Sample-1	25.251	29.266	4.015	25.388	0.137	3.412	4.24
		Sample-2	23.147	27.157	4.010	23.314	0.167	4.165	
		Sample-3	22.583	26.598	4.015	22.789	0.206	5.131	
Buffalo	Heart	Sample-1	22.054	26.062	4.008	22.280	0.226	5.639	5.32
		Sample-2	22.586	26.587	4.001	22.799	0.213	5.324	
		Sample-3	23.738	27.745	4.007	23.938	0.200	4.991	
	Brain	Sample-1	23.148	27.152	4.004	23.429	0.349	8.716	8.74
		Sample-2	23.737	27.746	4.009	24.117	0.380	9.478	
		Sample-3	25.250	29.255	4.005	25.571	0.321	8.014	
	Liver	Sample-1	23.152	27.155	4.003	23.429	0.277	6.930	6.56
		Sample-2	22.050	26.057	4.007	22.282	0.232	5.789	
		Sample-3	23.805	27.807	4.002	24.084	0.279	6.971	

TABLE 2: Comparison of mean fraction of ash values

	Chicken	Goat	Buffalo
Heart	5.18 %	2.53 %	5.32 %
Brain	7.62 %	11.18 %	8.74 %
Liver	6.56 %	4.24 %	6.56 %

respectively (Table 1). The comparison of the mean ash values of the three vital organs of the three different species is tabulated in Table 2.

DISCUSSION

The Unani philosophers and physicians have attributed specific Mizāj to each species, sex, stages of life, Akhlāṭ, organs, Arwāḥ, foods, medicines, seasons, places, and so on. Aristotle believed that the most Ḥārr Rukn is fire, the most Bārid Rukn is water, the most Raṭb Rukn is air, and the most Yābis Rukn is earth in the world (9), and these Kayfiyāt cannot exist in a uniform ratio in any condition. Philosophers believed that the Kayfiyāt attributed to any matter are always relative to certain context and may vary in different contexts. Arkān are the only components where Kayfiyāt are absolute and fixed (10).

The dominance of a Kayfiyāt is due to the presence of its relevant Ajzā' Awwaliah (primary constituents). The presence of Ḥarārat is believed to be due to Rukn Nār or Rukn Hawā', Burūdat is due to Rukn Mā' or Rukn Arḍ, Ruṭūbat is due to Rukn Hawā' or Rukn Mā', and Yubūsat is due to Rukn Arḍ or Rukn Nār. In other terms, if something among Mawālīd Thalatha is attributed to Ḥārr-Raṭb, then it connotes the presence of Ajzā' Hawā'iyya in excess; likewise, if attributed to Ḥārr-Yābis, then it signifies the presence of Ajzā' Nāriyya in surplus; if attributed to Bārid-Raṭb, then it denotes the presence of Ajzā' Mā'iyya in excess; and if attributed to Bārid-Yābis, then it implies the dominance of Ajzā' Arḍiyya (3).

Therefore, the attribution of Mizāj is based on Kayfiyāt of Ajzā' Awwaliyyah. For instance, organs exhibit their Mizāj and properties as per their dominant Rukn and their respective Kayfiyāt. It is a physiological fact that all organs require certain affinity of Kayfiyāt that enables them to perform their functions. A simple observation of organs reveals certain inherent Mizāj in them. The bones, for example, being stiff and hard are attributed to Bārid-Yābis, which enables them to support the weight of the body. The liver, with its reddish-brown color and warm and spongy texture, is attributed to Ḥārr-Raṭb as it is intrinsically designed for producing Akhlāṭ. If organs were perfectly equal to their ratio of Kayfiyāt, then the body would have been inert and static. Thus, the Mizāj of organs is in congruence to their natural needs, and they influence the Mizāj of an individual as a whole (2–6).

The organs are most vulnerable to Kayfiyāt that run counter to those it needs for optimal functioning. For example, the brain is the Bārid-Raṭb organ and its functions will seriously impair at times of high fever or excessive Ḥarārat as well as dehydration in the body. Thus, the basic vulnerabilities of an organ tell a lot about its Mizāj-i-Asli. Deviations from Mizāj-i-Asli would compromise its Quwā and Ṭabī'at, leaving organs vulnerable to dysfunction and disease (2,3).

The philosophers have described the Mizāj of heart as Ḥārr-Yābis, of brain as Bārid-Raṭb, and of liver as Ḥārr-Raṭb. This attribution of Kayfiyāt indicates the presence of pertaining dominant Ajzā' Awwaliyya in the vital organs. In the heart, it is believed that Kayfiyāt Ḥārr may be because of Ajzā' Nāriyya or Ajzā' Hawā'iyya, and Kayfiyāt-i-Yābis may be due to Ajzā' Arḍiyya or Ajzā' Nāriyya. In the brain, Kayfiyāt Bārid may be due to Ajzā' Mā'iyya or Ajzā' Arḍiyya, and Kayfiyāt Raṭb may be due to Ajzā' Hawā'iyya or Ajzā' Mā'iyya. In the liver, Kayfiyāt Ḥārr may be due to Ajzā' Nāriyya or Ajzā' Hawā'iyya, and Kayfiyāt Raṭb may be due to Ajzā' Hawā'iyya or Ajzā' Mā'iyya (3–5).

In this study, determining the cause of Yubūsat in the heart, using the ash value estimation was of prime concern. So, a comparative analysis of ash values of three vital organs, the heart, brain, and liver, of three different species, chicken, goat, and buffalo, was carried out.

The hypotheses formulated for testing were as follows:

H_0 = No difference exists in ash values of the three vital organs in the three different species.

H_{A1} = If the mean total ash value of the heart is higher than that of the brain and liver, it will connote the cause of Yubūsat as Yubūsat Arḍiyya.

H_{A2} = If the mean total ash value of the heart is lesser than that of the brain and liver, then Yubūsat will be implied as Yubūsat Nāriyya.

The mean total ash values of the brains were maximum among all the three species, chicken, goat, and buffalo (i.e., 7.62%, 11.18%, and 8.74%, respectively; Table 2). The total ash values of the brains of the three species indicate the presence of Burūdat Arḍi, which could be the grounds of attribution of Kayfiyāt Bārid in the brain. Moreover, the Kayfiyāt Raṭb of the brain may be because of Ajzā' Mā'iyya or Ajzā' Hawā'iyya, which are volatile and were not under study.

The mean total ash values of the livers in the three species, chicken, goat, and buffalo, were lesser than those of the brains and higher than those of the hearts (i.e., 6.56%, 4.24%, and 6.56%, respectively; Table 2). This result indicates the presence of Ajzā' Arḍiyya in lesser amount in the liver, for which the philosophers would have attributed its Mizāj as Ḥārr-Raṭb. The presence of Ajzā' Arḍiyya in the liver validates the philosophy that each organ possesses all Arkān in varied ratios. Moreover, in the liver the presence of other Arkān, that is, Ajzā' Nāriyya, Ajzā' Hawā'iyya, and Ajzā' Mā'iyya, would be in higher quantity than Ajzā' Arḍiyya and so the Mizāj is attributed as Ḥārr-Raṭb. It seems that the attribution to Ḥarārat is due to the presence of Ajzā' Nāriyya or Ajzā' Hawā'iyya in excess, and Ruṭūbat is due to the occurrence of Ajzā' Hawā'iyya or Ajzā' Mā'iyya in surplus.

The mean total ash values of the hearts in the three species, chicken, goat, and buffalo, were least compared with those of the brains and livers (5.18%, 2.53%, and 5.32%, respectively; Table 2). This result indicates the presence of Ajzā' Arḍiyya in least amount in the heart, and the attribution of Yubūsat in the heart is of Yubūsat Nāri. Moreover, Ḥarārat is because of Ajzā' Nāriyya in dominance or the presence of Ajzā' Hawā'iyya in it.

Yubūsat is needed for hardness, stiffness, and durability to stay active and dynamic (3,7). Compared with the brain and liver, the heart is more rigid in nature, which indicates the presence of Yubūsat in it. The heart's consistent activity and resemblance with the flame shape of Rukn Nār also signify the presence of Yubūsat Nāriyya.

Since the heart is a blend of volatile and non-volatile Ajzā' Awwaliyya, through combustion, the Ajzā' Laṭīf (rarefied portion; i.e. Ajzā' Nāriyya, Ajzā' Hawā'iyya and Ajzā' Mā'iyya) disperses and the Ajzā' Kathīf (dense portion; i.e., Ajzā' Arḍiyya) remains as ash.

In this study, the least total ash value of the heart among all the three species implies the least presence of Ajzā' Arḍiyya and, in turn, validates the presence of Yubūsat Nāriyya in it. Thus, the heart's shape, firmness and function are in accordance with its Ḥarārat and Yubūsat Nāriyya.

CONCLUSION

Of these vital organs, philosophers' believed that only one organ was Bārid, that is, the brain. The Burūdat of the brain is not of such degree that it could modify the Ḥarārat of the heart and liver. In this study, the highest mean ash value of the brain in all the three species suggests that the Burūdat in it is Burūdat Arḍiyya.

Philosophers also consider the other vital organ, heart, as Yābis or nearly so. The Yubūsat in it is not up to such a level so as to alter the Ruṭūbat of the brain and liver. The least mean ash value of the heart of all the three species validates its Yubūsat as Yubūsat Nāriyya.

However, neither the brain is absolutely Bārid nor the heart is entirely Yābis. In fact, the heart in relation to the brain and liver is Yābis. Similarly, the brain in relation to the heart and liver is Bārid.

This study is unique of its kind, as no attempt has ever taken place in the past to quantify the Rukn. This analysis would provide a new window to understand the Mizāj of vital organs, determining their structure and functions. Therefore, it is hoped,

this study not only will provide a sound basis for all future discussions on the heart's structure and function but will also help seek an explanation of the deeper intricacies of the basic principles of Unani medicine, as they are not self-evident to everyone.

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