

## AVICENNA'S DOCTRINE ABOUT ARTERIAL HYPERTENSION

### AVICENINO NAUČAVANJE O ARTERIJSKOJ HIPETENZIJI

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#### SUMMARY

*Arterial hypertension is a major risk factor for the development of cardiovascular diseases. Data from observational studies indicate that it may affect 90% of the general population during their lifetime. Despite much research that has been done, the exact cause of this disorder is still unknown. Avicenna (Ibn Sina) in his masterpiece The Canon of Medicine described most of the clinical features, causes, and complications which are consistent with hypertension symptoms based on modern medicine. He described in detail the symptoms of hypertension such as headache, heaviness in the head, sluggish movements, general redness and warm to touch feel of the body, prominent, distended and tense veins, fullness of the pulse, distension of the skin, coloured and dense urine, loss of appetite, weak eye sight, impairment of thinking, yawning, and drowsiness. Moreover, Avicenna described haemorrhage and sudden death as the complications of hypertension. Due to the importance of this issue, we wanted to call the reader's attention to Avicenna's views about what corresponds to hypertension in modern medicine.*

**Key words:** Avicenna; arterial hypertension; Iranian traditional medicine; black bile.

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## INTRODUCTION

Arterial hypertension (AH) is a major health problem all over the world that significantly increases the risk of disorders such as stroke and myocardial infarction [1,2]. Studies have shown that people who are normotensive at 55 years of age have a 90% lifetime risk for developing hypertension [3].

Despite the increasing incidence of hypertension, less than 30% of patients keep it under control in most countries [2]. However, the disorder has been known for as long as the history of medicine can remember. One of the most distinguished men of medicine, Ibn Sina or Avicenna, has described it in his masterpiece *The Canon of Medicine (Al-Qanun fi al-Tibb)* as early as 1025. The aim of this article is to bring Avicenna's views about hypertension closer those of modern medicine.

## SHORT BIOGRAPHY OF AVICENNA

Abu Ali al-Hossein ibn Abdullah ibn Sina, known in the west as Avicenna, was born in Kharmaitan, a village near Bukhara in August 980 and passed away in the city of Hamadhan in June 1037 [4]. He is perhaps the best known Persian physician in the history of medicine [5,6]. In addition to his expertise in medical sciences, Avicenna was a great philosopher, politician, astronomer, administrator, and governor [7]. There is a controversy regarding the number of books attributed to him, that ranges from 276 to about one hundred, as proposed by Soheil M. Afnan [4]. These books address a variety subjects such as music, religion, philosophy, physics, theology, astrology, psychology, and medicine. Avicenna was a great humanist, completely devoted to truth and knowledge without any prejudice [4]. His masterpiece, *Al-Qanun fi al-Tibb* or *The Canon of Medicine* had served as an essential scholarly medical encyclopaedia for almost a millennium [8].

The book was first translated into Latin by Gerhard von Cremona (1135–1187) and into Hebrew around 1491 [9].

*Al-Qanun* consists of five books: the first looks into general medical definitions, anatomy, and physiology; the second into simple and compound drugs; the third into special pathology; the fourth into diseases involving more than one member; and the fifth is a formulary [10]. De Pouré nicely summarised the role of Ibn Sina in the development of medicine as follows: “Medicine was absent till Hypocrites created it, dead till Galen revived it, dispersed till Razi collected it, deficient till Avicenna completed it” [11].

## THE PRINCIPLES OF PERSIAN TRADITIONAL MEDICINE

Persian traditional medicine is based on the “theory of humours”. This theory proposes the presence of four humours in the human body: Dam (blood), Balgham (phlegm), Safra (yellow bile), and Sauda (black bile) [12]. In each temperament, a specific proportion of humours in terms of quality and quantity will maintain health and any change in this proportion can produce illness [13,14]. According to the dominance of humours in the body, the temperament of people can be divided into four groups: sanguine (Dam), phlegmatic (Balgham), choleric (Safra), and melancholic (Sauda). It should be noted that temperament is the historical foundation of pathology, diagnosis, and treatment, and has a vital role in maintaining the ideal healthy state of an individual. The humours possess their own temperaments, blood is hot and moist, phlegm is cold and moist, yellow bile is hot and dry, and black bile is cold and dry. Each person has a unique humoral constitution representing his state of health [15].

## ARTERIAL HYPERTENSION IN PERSIAN TRADITIONAL MEDICINE

Traditional medical literature does not know of the concept of “hypertension”, but Avicenna in his *Canon*, specifically in chapters ‘Emtela Bihasab Al Aw’eyyah’ and ‘Ghalabat Al Sauda’[16, 17], describes most of the clinical features, causes, and complications that are consistent with hypertension symptoms described by modern medicine. We shall first take a look into how Avicenna explains the underlying processes and then look at the correlation with modern medicine.

### EMTELA

In the *Canon*, Ibn Sina describes a condition in which normal and/or abnormal fluids accumulate in the body. This condition, in which humours are of normal quality, yet they accumulate in the arteries and veins beyond their capacity, is called Emtela and means repletion. Emtela is divided into two categories: Emtela Bihasab Al Aw’eyyah (repletion of the channels of the body) and Emtela Bihasab Al Quwwah (repletion of the strength of faculties).

Ibn Sina’s description of the first category, Emtela Bihasab Al Aw’eyyah, strongly suggests that it corresponds to the modern day hypertension.

The causes of Emtela can be external or internal. Activities or diets that can produce extra moisture in the body are considered external causes such as excessive bathing (especially after meal), lack of exercise, heavy foods, and

alcoholic drinks. Examples of internal causes are the weakness of the digestive or expulsive faculty or the abnormal strength of the retentive faculty and the narrowness or blockage of the body channels. All of these can increase the humours in the body and result in Emtela [16].

Avicenna describes the general symptoms of Emtela as headache or heaviness in the head, sluggish body movements, redness of the body, warmth of the body on touch, prominent, distended and tense veins, loss of appetite, weak eye sight, yawning and drowsiness, difficulty concentrating, dense and coloured urine, and dreams that indicate heaviness (for example, being unable to move or stand up or utter words or carrying heavy weights) [16].

Sometimes Emtela can tear up the vessels, the humours can flow out towards blocked passages, and stroke can develop. Avicenna explains that over-distension of the vessels can lead to rupture with even a slight movement. The ensuing complications, he says, can be haemorrhage and sudden death [17].

Oskar Cameron Gruner had already observed a similarity between Emtela (or as it terms it “plethora”) and hypertension symptoms in his book *A Treatise on The Canon of Medicine of Avicenna* that was published in 1930 (and reprinted 1975) [18].

#### GHALABAT AL SAUDA (BLACK BILE DOMINANCE)

According to modern medicine, higher peripheral resistance due to atherosclerosis and constriction of vessels is another cause of hypertension [19]. In our previous article we briefly discussed Avicenna’s hypothesis that the deposition of abnormal black bile can destroy the natural elasticity of arteries, as it causes stiffness in the vessels and consequently atherosclerosis [8]. Avicenna proposed that due to its cold and dry properties Sauda could lead to condensation, and that this condensation could be responsible for the constriction and narrowing of the vessels [16].

## CONCLUSION

Avicenna was an exceptionally enlightened medical practitioner, whose description of hypertensive symptoms in the two chapters of *The canon* confirm his deep insight into human pathophysiology, considering the historical context in which he lived.

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#### SAŽETAK

*Arterijska hipertenzija među glavnim je rizičnim čimbenicima nastanka bolesti srca i krvotok. Podaci iz opažajnih ispitivanja ukazuju na to da se arterijska hipertenzija tijekom života javlja u 90% opće populacije. Unatoč intenzivnom istraživanju, još nije utvrđen uzrok ovoga poremećaja.*

*Avicena (Ibn Sina) je u svom kapitalnom djelu Kanon medicine opisao većinu kliničkih manifestacija, uzroka i komplikacija koje odgovaraju modernom opisu simptoma hipertenzije.*

*Do pojedinosti je opisao simptome poput glavobolje, osjećaja težine u glavi, usporenosti, općeg crvenila, toploga tijela na dodir, izraženo proširenih i tvrdih vena, punoće bila, rastezanja kože, obojane i guste mokraće, gubitka teka, oslabjela vida, otežanog razmišljanja, zjjevanja i pospanosti.*

*Kao komplikacije hipertenzije Avicena navodi krvarenje i naglu smrt. Zbog važnosti teme, htjeli smo ovim člankom prenijeti Avicenino viđenje onoga što se danas u medicini naziva hipertenzijom.*

**Ključne riječi:** *Avicena, arterijska hipertenzija, tradicionalna perzijska medicina, crna žuč*