

## THERAPY AND MEDICAMENTS BY IBN AL-NAFIS

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### ABSTRACT

Ibn Al-Nafis was one of the head physicians in Egypt and an outstanding and brilliant philosopher of the 13th century A.D. He devoted all his life to his studies in medicine and anatomy. He began his research work with explaining the compilations of other physicians then turned his way, and began writing his own books based on his personal experiments on human bodies and animals, and could come to his own conclusions about the mechanism of action of the different organs. He also tried his best to present medicine to the common people as simple as possible. He described many forms of dietary food, best drugs to use etc. He gave specified new nomenclature and definitions to drugs also. Thus his life was filled with scientific activity specially medicine and helped in directing it to the right and true path which guided the European scientists to follow his ideas and to discover more about it.

Alaa El Din Ali ibn Abi Al-Hazm Ibn Al-Nafis Al-Qurashi (or Al-Qarashi)... known as Ibn Al-Nafis, was one of the head physicians in Egypt and an outstanding and brilliant philosopher of the 13th century A.D. He was born in Damascus, Syria in 1207 A.D. studied medicine in the Bimarestan (hospital) of Ibn Zanki in Damascus as a pupil to the physician Al-Dekhwaar, and later to Omran Al-Israeli. He migrated to Cairo, Egypt during the rule of the Ayyubid King Al-Kamel, and worked as a phy-

sician in the Hospital Al-Naseri (built by the King Al-Naser Salah Al-Din (Saladin). Later on, he became chief physician at the Bimarestan Al-Mansouri which was built by the King Al-Mansour Qalawoun in 1285 A.D. When he died, in 1288 A.D. he donated his house and books to this hospital.

Ibn Al-Nafis devoted all his life to his studies in medicine and anatomy, did not get married, was very modest in scientific vanity, was busy

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in discussing the intellectual and scientific persons at his home most of the day and night. His genius mind was not due to, as many of his critics and opposition declared, that he knew by heart all of the medical works of Avicenna, but in fact that he corrected many of Galen's and Avicenna's books in medicine and therapy, and so could discover the lesser blood circulation (i.e. from the heart to the lungs).

All physicians of Ibn Al-Nafis time took for granted, the theories concerning the physiological function of the body organs which were mentioned by Galen, and afterwards, by Avicenna, without doubting in its contents, ...except Ibn Al-Nafis, who considered Hippocrates... that great Greek physician as more accurate than any one who came after him. He wrote a book explaining the texts of Hippocrates called 'Sharh Kotub Abiqrat', and commented on it. Ibn Al-Nafis, although denied strongly that he was practising dissection, yet his accurate interpretations and findings about the passage of the blood in the heart and the function of the veins in it, proves the opposite. He corrected that Galen mentioned about the presence of minute pores through which, the blood passes from the right cavity of the heart to the left cavity, and explained that the passage of blood from the right cavity is done through the pulmonary artery to the lungs,

where it mixes with air, then returns from the lungs to the left cavity through the pulmonary vein, where the 'spirit' is produced, then runs from the heart to the tissues. (the greater blood circulation i.e. the return of the blood from the tissues back to the right cavity of the heart was not known until William Harvey in 1616 and Marcello Malpighi in 1661 could, through the use of a microscope of viewing the minute capillaries responsible for that).

Ibn Al-Nafis, mentioned also that, there must be inside of the human heart, another cavity where the blood gets ready for its admixture with the atmospheric air i.e. the air can not mix with blood in its coarse state. This cavity lies in the right cavity of the heart, and when the blood gets softer in this cavity in contact with air, then it passes to the left cavity where the spirit is born, but since the wall between the two cavities is impermeable, and has no apparent exit, as some people has thought, and also no invisible exit as Galen thought, because the body of the heart is so thick and the valves are also impermeable, then the blood must pass through the pulmonary vein to the lungs where it stays till it mixes with the air and gets rid of lighter matter then passes to the pulmonary vein till it reaches the left cavity of the heart after being admixed with the air and become suitable for the 'spirit' to be created... what is left in the blood of coarser

matter, is used by the lungs for its nourishment.

Also, Ibn Al-Nafis was aware that the nourishment of the heart comes from the blood passing through the heart veins, where he mentioned that the blood in the right ventricle of the heart is not suitable for its nourishment. The heart gets its food from the blood that passes in its veins.

He also corrected what Avicenna had quoted from Galen about the heart cavities, when he mentioned that the heart has three ventricles, and this is not true, because the heart has only two ventricles, one of them is filled with blood which is the right one, and the other is filled from the spirit, i.e. the left one, and there exists no passage between those two ventricles, or else the blood could pass to the place of the spirit and so destroys its nature, and the anatomy of such organ shows how wrong they are.

This explanation of the lesser blood circulation was mentioned in Ibn Al-Nafis's book entitled 'Tashreeh Al-Qanun li Ibn Sina' (Anatomy of Al-Qanun by Avicenna), which is his most important compilation. (this volume was not discovered until 1921 in Berlin, and so the real value of Ibn Al-Nafis's discovery of this theory was recently known). In fact, the discovery of the lesser blood

circulation dates back to the ancient Egyptians, who, through their dissection of both the human bodies and the animals, could discover many anatomical features and physiological properties of the different organs, as evidenced by the contents of Edwin Smith Surgical papyrus (1550 B.C.), where mention of the heart and its function in blood circulation was widely known to most surgeons. The Greeks quoted much from the ancient Egyptian anatomy and physiology, specially that of the heart, and so appeared in Hippocrates's works, and later in the theories of Erasistratos, that great Alexandrian anatomist and physiologist at the famous Mauseion of Alexandria, Egypt where he performed his experiments in its medical school on humans and animals specially monkeys (3rd century B.C.). These informations about the heart and its functions were familiar to Greek physicians including Galen, whose works were translated into Arabic, after being translated into Coptic, Syriac and other languages. Thus the Arab-Islamic scientists, after translating most of the Greek medical volumes, could benefit from it all and distributed it through all of the new Islamic empire. The British physician and physiologist William Harvey (1578-1657 A.D.), could rediscover this lesser blood circulation in 1616, and opposed and corrected many of the opinions of Galen, Vesalius, Servetus (a Spanish physician, 1511-

1553 A.D. who also rediscovered that part of the blood runs in the lungs), Columbus, Cesalpinus and others. Harvey found that the heart muscle acts as a muscular pump and the blood is pushed to the lungs through the veins and arteries.

Ibn Al-Nafis began his researches by explaining the compilations of other physicians, such as that of Avicenna's Qanun, Hunain Ibn Ishaq's 'Al-Masaa'el', Hippocrates's *materia medica*, Galen's anatomy.. and others, then turned his way, and began writing his own books based on his personal experiments on human bodies and animals, and could come to his own conclusions about the mechanism of action of the different organs he examined.

His own compilations were :

1. Sharh Mufradat Al-Qanun (Explanation of the simple drugs in Al-Qanun by Avicenna), and also an abridged form.
2. Tafasir Al-Elal wa Asbab Al-Amraad (Explanation of the diseases and their causes).
3. Sharh Al-Hedayah fil Tibb (Explanation of the Salvation in Medicine).
4. Al-Shamel fil tibb (Comprehension in Medicine), which he intended to be in 300 volumes, but could not write except 80.
5. Al-Muhazzab fil Kohl (The Refined book in Ophthalmology).

6. Al-Mukhtaar min Al-Aghzia (Selection from Foods).

7. Sharh Tashrih Ibn Sina (Explanation of Avicenna's anatomy).

8. Al-Resalah Al-Kameliah fil Sirah Al-Mohammadiyah (Kamel's Treatise on Mohammad's Biography), where he mentioned once more the role and function of the heart, lungs and pulmonary blood circulation (Lesser blood circulation), and also the function of the different human body organs, and the way each operates.

He also tried his best to present medicine to the common people as simple as possible, so as the greater majority of them could know the different body organs and their functions. Also, he pushed greatly the development in medicine when he facilitated the treatment for the sick people, modified the healing procedures, and the regulation of the patient's diet in the first place rather than to depend on drugs alone.

So, in the other abridged book on Al-Qanun of Avicenna 'Mougaz Al-Qanun Fil Tibb' (Abridged Al-Qanun), he described many forms of dietary food, best drugs to use etc., thus arranged it accordingly to four arts;

1. The two important rules in practising medicine i.e. scientifically and practically.
2. Simple and compound drugs together with food.

3. Specific diseases of each organ, causation, diagnosis, and treatment.
4. Diseases that occur in a definite organ than the other, causation, signs and treatment.

Concerning the therapy using drugs, Ibn Al-Nafis mentioned that they are governed by three laws :

1. Selection of the specific drug after knowing the illness, using it as an antidote.
2. Selection of the amount and mode of action of the specific drug using the way of assumption regarding the nature of the diseased organ, the severity of the disease, patient's age, his habits, season, occupation, country, facial features and his body strength.
3. Recognition of the exact time the disease has occurred.

Ibn Al-Nafis recommended the use of bathing the patient before and after taking the treatment, and warned against eating after the drug has been administered or else the potency of the drug will decrease, since the body will be busy with digesting the food.

He also recommended the use of venesection, cautery since it will purify the blood, cures headaches (meaning high blood pressure), intentional vomiting twice monthly, avoiding constipation due to laziness of the intestines by using purgatives in upgrading potencies, keeping care

not to use one drug repeatedly for a longer period lest the body gets accustomed to it, and if the patient can take food instead of any drug, it is strongly advisable.

Concerning simple drugs, Ibn Al-Nafis recommended the intake of a single moderate one, as much as possible, instead of using compound drugs such as the Tiryagues, in which each component acts separately and independently on the body organs producing harmful side effects. He also showed that the effect of the drug may be shown through external application such as bandages or internal one like orally.

He explained also that the force of action of the drug could be identified through two channels; the first is experimentally while the second is done by sequence... and concluded that experimentation is far more better. Also, the way the drug acts can be known whether the effect is slow or fast.

Ibn Al-Nafis also gave specified new nomenclature and definitions to drugs, such as :

1. The Condensed drug; that which does not dissolve rapidly inside the body (*Al-dava-al-kaseef*).
2. The Brittle drug; that which pulverise easily by any slight pressure (*Al-dava-al-hash*).
3. The Nice drug; that which dissolves rapidly inside, due to the

body's own temperature (*Al-dava-al-lateef*).

4. The Sticky drug; that which separates when gets over stretched (*Al-dava-al-lazij*).

5. The Solid drug; that which liquifies while being firm and in piece (*Al-dava-al-jamed*).

6. The liquid drug; that whose parts fall down easily (*Al-dava-al-sael*).

7. The Salivary-like drug; that which separates into parts when infused, forming a sticky-product (*Al-dava-al-luabi*).

8. The Greasy drug; that which forms a greasy interior (*Al-dava al-dahani*).

9. The Desiccating drug; that which absorbs water when gets in contact, showing no visible traces (*Al-dava-al-munashshifi*).

10. The Soothing drug; that which makes the component thinner (*Ai-dava-al-mu'attif*).

11. The Decomposing drug; that which facilitates the evaporation of the component (*Ai-dava-al-mahlil*).

12. The Polishing drug; that which removes the sticky liquids from the organ (*Al-dava-al-jali*).

13. The Harshening drug; that which changes the surface of the organ differently after being in contact with a sticky material (*Al-dava-al-mukha-shshin*).

14. The Opening drug; that which gets out the material which blocks

down the vessel (*Al-dava-al-mufathih*).

15. The Relaxing drug; that which softens the limb with its own heat and humidity (*Al-dava-al-murakhi*).

16. The Ripening drug; that which changes the form of the mixture and pushes it outside (*Al-dava-al-munzij*).

17. The Digestive drug; that which accelerates the ripening of the food. (*Al-dava-al-Hazim*).

18. The Carminative drug; that which tenderizes the winds (gases) and drags them outside (*Al-dava-al-muhallil-lil-Riah*).

19. The Dividing drug; that which divides the material into small portions but still keeping a thick consistency (*Al-dava-al-muqatta*).

20. The Extracting drug; that which moves the material from its place (*Al-dava-al-jazib*).

21. The Pungent drug; that which disconnects, through its penetrative power, the organ attachment in several points, which can not be felt individually but collectively (*Al-dava-al-lazi*).

22. The Warming drug; that which pulls the blood strongly up to skin, causing a rise in its temperature giving it a deeply red colour (*Al-dava-al-muhammir*).

23. The Scraping drug; that which attracts externally a pungent acrid humour (*Al-dava-al-muhakkik*).

24. The Ulcerative drug; that which is concerned with the original humi-

dity and pulls out a bad substance that ulcerates (*Al-dava-al-muqurih*).

25. The Burning drug; that which keeps with its hotness, the softness of the humours and its ashes (*Al-dava-al-muhrique*).

26. The Corrosive drug; that which minimizes the size of a part of the flesh due to its increased ulceration (*Al-dava-al-akkal*).

27. The Crumbling drug; that which converts the solid humour into smaller segments (*Al-dava-al-mufatit*).

28. The Putrefying drug; that which alters the nature of the spirit and humidity thus making it unsuitable for the desired function (*Al-dava-al-mauffin*).

29. The Caustic drug; that which burns the skin turning it into the state of melted grease (*Al-dava-al-kavi*).

30. The Exfoliating drug; that which expels the rotten parts (*Al-dava-al-quashir*).

31. The Tonic drug; that which changes the temperament of the organ thus preventing it from retaining the excreta (*Al-dava-al-muquavvi*).

32. The Restraining drug; that which is controversialy to the extracting drug (*Al-dava-al-radi*).

33. The Thickening drug; that which is controversialy to the soothing drug (*Al-dava-al-muqal'iz*).

34. The Unripening drug; that which is controversialy to the digestive drug (*Al-dava-al-mufaj'ij*).

35. The Soporific drug; that which renders, the sensitive or the locomotive spirit (soul) or the part that can not be affected psychologically, completely acceptable (*Al-dava-al-mukhaddir*).

36. The Flatulating drug; that which possess excretive humidity that is undecomposable by heat thus forming gases (*Al-dava al munaffikh*).

37. The Washing drug; that which cleans through its humidity and flowing power (*Al-dava-al-Gassal*).

38. The Filthyng drug for ulcers; that which slickens them with its humidity (*Al-dava-al-musikh-lil-Quruh*).

39. The Slipping drug; that which liquifies the surface of excreta which is congested in the tract, thus facilitates its expulsion (*Al-dava-al-muzaliqua*).

40. The Smoothing drug; that which spreads over the surface of a rough organ, thus hiding its harshness (*Al-dava-al-mumallis*).

41. The Drying drug; that which abolishes the humidity by soothing and disintegrating it (*Al-dava-al-mujatiff*).

42. The Astringent drug; that which sticks together all of the organ's segments (*Al-dava-al-quabiz*).

43. The Squeezing drug; that which fortifies the astringent effect till it evacuates what is in the organ (*Al-dava-al-Aasir*).

44. The Blocking drug; that which becomes clogged in the tracts due to increased condensation or stickiness or dryness, thus blocks it (*Al-dava-al-musaddid*).

45. The Glueing drug; that which is dry with sticky humidity that sticks to the openings and plugs them (*Al-dava-al-mugarri*).

46. The Healing drug; that which desiccates, making the humidity which forms over the cut wound so sticky and hold together (*Al-dava-al-mudammil*).

47. The Flesh-producing drug; that which agglutinates the blood that flows to the cut wound, thus forming

new flesh (*Al-dava-al-mumbit-lil-Lahm*).

48. The Sealing drug; that which is applied over the cut wound to guard against sepsis (*Al-dava-al-khatim*).

49. The Theriaque; that which preserves the health and strength of the spirit, thus antagonizes poisons (*Al-dava-al-tiryaqueval-fadzahar*).

That was the life of Ibn Al-Nafis, filled with scientific activity specially medicine, and helped in directing it to the right and true path which guided the European scientists to follow his ideas and to discover more about it.

सरांश

## इब्न अल नफीस द्वारा वर्णित चिकित्सा एवं औषधियाँ

—समीर यह्या अल गम्माल

इब्न अल नफीस 18 वीं शती ईसवी के एक प्रमुख तथा प्रतिभाशाली दार्शनिक एवं मिस्र देश के प्रधान चिकित्सकों में से एक थे। अन्य विद्वानों की सुप्रसिद्ध चिकित्सा-ग्रन्थों की ब्यख्याओं के लेखन से उन्होंने अपना अनुसंधान कार्य प्रारंभ किया। तत्पश्चात् मनुष्यों एवं प्राणियों पर परीक्षण करके इन्होंने अपने अनुभवों के आधार पर स्वयं भी कई ग्रन्थ लिखे। इन्होंने चिकित्सा-विज्ञान को सरलतम रूप में साधारण जनता तक पहुँचाने तथा विभिन्न औषधियों के विषय में नये नाम तथा परिभाषायें भी देने हेतु भरसक प्रयास किया। इस प्रकार इन्होंने चिकित्सा-विज्ञान के अध्ययनार्थ अपना सम्पूर्ण जीवन समर्पित कर दिया।