

## **IBN AL-NAFIS: THE FATHER OF CIRCULATORY PHYSIOLOGY**

The golden age of Arab Medicine reached its peak with Ibn Sina. Close to him, only came Ibn Al-Nafis, whose contributions earned him the title 'the second Ibn Sina'. The Arab physician Ala-al-din Abu Al-Hassan Ali Ibn Abi-Hazm Al-Qarshi Al-Damishqi, popularly known as Ibn Al-Nafis was born in the small town of Qarsh near Damascus in Syria in 1210 CE. He received training at the Al-Nasiri hospital in Damascus, a scholarly centre of medicine at that time. Although a prominent ophthalmologist by training, he learnt literature and politics as well. He was also an expert in the Shafi'i school of jurisprudence. In 1236 CE, he moved to Egypt to work in Al-Mansouri hospital where he later became the chief of physicians and the Sultan's personal physician.

Ibn Al-Nafis once said, "If I do not know that my work will not last up to ten thousand years after me, I will not write them". His meticulous work integrated medical knowledge with great clarity and emphasized precision. He described cranial nerves and gall bladder anatomy. He promoted new aspects in ophthalmology and wrote about therapy through nutrition. He rightly challenged and wrote several commentaries on the then considered infallible works of Hippocrates', Galen, Ibn Hunayn Ishaq' and Ibn Sina.

The massive destruction of books by Hulako Khan's Army during the devastation of Baghdad in 1258 CE led to an intense scientific activity among Muslim scientists and scholars far and wide. Ibn Al-Nafis notable books include:-

- *Sharah al Tashreeh al Qanoon* (illustration of the anatomy of law),
- *Kitab Al-Mujaz al-Qanun* – a handbook for medical students and practitioners,
- *Al-Shamil fi al-Tibb* – a huge medical encyclopedia,
- *Risalat al-Aadaa*,
- A book on Ophthalmology which documented the treatment of Trachoma and its sequelae,
- *Kitab al-Mukhtar fi al-Aghdhiya* – a book on the effects of diet on health and
- *Al-Risalah al-Kamiliyyah fil Siera al-Nabawiyyah* (translated as Theologus Autodidactus) is claimed to be both the first theological novel and the first science fiction novel.

Despite the above mentioned amazing record, his ground breaking contribution was the description of pulmonary circulation. This work was not only the 'first ever' but

also 'as we know it today'. Due to this he was called "the father of circulatory physiology". The salient features of his experimental research are as follows:-

- Blood in right ventricle reaches the left ventricle by way of lungs and not through a passage connecting the ventricles.
- The inter-ventricular septum does not have visible or invisible pores.
- The lungs are composed of bronchi, branches of arteria venosa and branches of the vena arteriosa, all connected by loose porous flesh.
- Blood from the right chamber of the heart goes to -vena arteriosa (pulmonary artery) - lungs - arteria venosa (pulmonary vein) - left chamber.
- Nourishment of heart is from the blood that goes through the vessels that permeate the body of the heart.

Emanating from an Arabian physician of the 13<sup>th</sup> century, these startling discoveries continue to amaze us today. It is noteworthy that the medieval times in which he lived, dissection was regarded a controversial subject due to clerical rules. However, the taboos against which he functioned could not dampen his curious and inquiring spirit.

He recorded these discoveries in his famous book '*Sharh Tashrih Al-Qanun*', which he put in writing at the age of twenty nine years. It is quite saddening to note that his scientific prowess remained hidden from the masses and the scientific community for centuries. His work was translated and wrongly attributed to Servetus, Vesalius, Columbus and Harvey. It may be highlighted that all erroneous claims to Ibn Al-Nafis' intellectual property were dumb founded as his work preceded the others by almost three centuries.

Ibn Al-Nafis, the gifted physiologist of Middle Ages, a talented doctor and a prolific writer, breathed his last in 1288 CE. Upon his death, he donated his house, library and clinic to his hospital. His seminal work contributed to the advancement of medical knowledge and betterment of medical practice for the times to come. The medical fraternity remains immensely indebted and influenced by his intellectual insights.

### **Note**

*This false impression continued until 1924 CE when Egyptian physician Dr Muhyi-al-din Al-Tatawi uncovered the truth and returned the credit to its rightful owner. He found a copy of the manuscript No.62243 titled "Commentary on the anatomy of the Canon of Avicenna" in the Prussian state Library in Berlin, Germany and prepared his doctoral thesis on it. Much to the surprise of his supervisor and colleagues he earned his PhD the same year.*