

## Ibn Tofayl and his 12<sup>th</sup> Century Medical Poem “Urjuzah fi Tibb”

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The 11th century was a period of great change in the Muslim world. On the one hand, the Islamic West witnessed the gradual fall of Sicily to the Normans in 1146 C.E. and, on the other hand the end of Omeyyad rule in 1031 C.E. This was followed by nearly sixty years of neglect and stagnation of progress under the Petty Kings (1031-1086 C.E).

However, with the arrival of the Al Moravid dynasty (1085 C.E), Muslim Spain once more caught up with development and advances in the scientific realm. There was then a period of compiling into books of whatever was still salvageable from decay. Subsequently it became a task of recording all vital information from recent research in matters of agriculture, literature, architecture, medicine etc. Plant cultivation, instead of being for private gardens of local rulers, was being taught to students, as well as botany and chemistry. New architectural edifices were erected all over the country. Students attended specialised schools and education was improved and transformed. Learning centres appeared in all walks of life and revolutionary discoveries were made. Scholarship was spreading, with training and practical colleges giving rise to new studies and experiments hitherto unheard of. Consequently, 150 years after the famous Omeyyad physician Az-Zahrawi (d.1013 C.E) who in his time complained that “medical science had regressed to the extent that no longer was anyone acquainted with anatomy let alone surgery”, the new state of education was evidenced in the erudition of the scholar Abu Bakr Muhamed Ibn Abdel Malik Ibn Tofayl Al Qaisi (d.1185 C.E).

In his role as a minister to the Al Mohad dynasty in Marrakech and Seville, Ibn Tofayl had both the perception and experience that facilitated a rare insight into many spheres. His work was always achieved through a process of incessant investigation that drew on several disciplines. His philosophical oeuvre “Hayy Ibn Yaqdan” reveals the creative thinking of a genius. It appraises the role of Ibn Tofayl’s empiricism and enlightenment in provoking a paradigm shift from philosophy to science and thereby made him open the door of ‘scientific reasoning’. He

draws attention to sciences and arts with examples and representations, where he does not limit himself to models, but rather he deploys a new theory based on practical and operational knowledge of nature. It gives a view on spectacular changes in the world of science from the 12th century, how it opened the line of experiment and demonstration of things discovered in the body and in nature; the evidence is based on demonstration and proof.

This philosophical work stimulated European mainstream thinkers from the 13th to the 19th century evoking discussions for more than 700 years after the writer’s death. The other useful work for an appraisal of Ibn Tofayl is his 7,700-verse medical poem “Urjuzah fi tibb” written in simple rajaz verse. This work surpasses Ibn Sina’s “qanun” canon that had hitherto been the standard Muslim medical work of reference. This literary legacy defined a new methodology of approach that medical students learnt by heart to detect the symptoms, discern the causes and prescribe cures for disease. It is the most thorough and complete of all medieval medical works, since it adopts techniques of logic and rational thinking. Here the encyclopaedic scholar Ibn Tofayl demonstrated a high degree of pre-occupation with man’s health and wellbeing, indicated by his awareness of the importance of a dietary treatment.

Furthermore, according to Dr M. Mellouki<sup>1</sup>, the topographical manner in which Ibn Tofayl set out his observations revealed his detailed knowledge of anatomy and physiology, illustrating how he must have derived this information from pertinent dissection as described in his works. The poem follows the presentation “minal qarn ila qadam” (from head to toe) method where each chapter is devoted to one illness, where the name of the illness is mentioned followed by its symptoms, its causes and the appropriate diet protocol. It lists treatments type by type: anti-inflammatory, antispasmodic, antiseptic, sedative, tonic, diuretic, febrifuge, salt free, appetiser etc. Ibn Tofayl underlines in this work the dimension of nutrition. Therefore in his time (12th century), nutritherapy was considered to be the second medicine after plants.

Furthermore he uses food as a diagnosis tool to confirm the physician's diagnosis. For example, in his clinical diagnosis of renal tumours he prescribes foods with anti-inflammatory, anti-spasmodic, muscular-relaxing and diuretic properties, knowing that these of themselves will have no effect upon the tumour. He distinguishes different tumour localisations: facia, kidney and ureter. This emphasises his good knowledge of anatomy, whereby he insists on eliminating the presence of pus, bearing in mind that a super-infection can occur and complicate an existing tumour. Hence this bears witness to the extent of his medical knowledge in which he relates clinical markers that are described nowadays to indicate urological tumours: haematuria, fever etc. He identifies the chorion, which is made of connective tissue and rich in nerve fibres as confirmed in modern works. Ibn Tofayl, for instance in a nosological study of urology, in the relevant chapter lists seven sections:

- Renal diseases
- Renal tumours
- Renal lithiasis
- Dysuria
- Urinary incontinence
- Burning without dysuria
- Haematuria: classification and treatment

He evokes a differential diagnosis: pathology of the colon showing the topographic differences between the colon and the kidneys or, topography of the bladder and the pubic area. He also suggests a topographical method for classifying tumours:

- Tumours of the envelope (renal fascia)
- Tumours of the urinary tract
- Tumours of the actual kidney

Ibn Tofayl's paradigm in medicine is the model that is used to explain events such as the understanding of the environment and the evolution of the human body. Thus his medical reasoning is designed to train physicians to seek underlying causes of a disease rather than simply suppress the symptoms. Dr Mellouki revealed in his work that Ibn Tofayl practiced postural physio-therapy techniques to help displace kidney stones towards an eventual extraction<sup>2</sup>.

Dr O. Benhar<sup>3</sup> studied the chapter of Ibn Tofayl's poem on the digestive system. He found a valid match between today's semiology and Ibn Tofayl's description of the following symptoms:

- Colonic obstruction, jaundice, cholera, splenomegaly, dyspepsia hepatomegaly, liver failure and liver tumours, ileus etc.

In his more recent work, on the chapter on ophthalmology, Dr Benhar<sup>4</sup> lists several eye diseases and their various treatments:

-Pterygion, cataract, conjunctivitis, hemeralopia, glaucoma, ulcer of the cornea, leukocoria, amaurosis, intraocular infection etc. several conditions with different types of eye drop for various symptoms.

Obviously from current dissection practices Ibn Tofayl knew about the different layers of the eye and their nerves. The preparation of medicines by sublimation and distillation caused a whole range of new drugs to become available based on vegetal and mineral products. The Islamic Agricultural Revolution, through which plants were coming from all parts of the known world, formed a new material medica which is reported in the works of his famous compatriot Ibn Baytar (d.1248), pharmacist, botanist, physician and scientist.

The Urjuzah was a literary legacy of the history of medicine and therapeutics in the 12th century. It demonstrates the high degree of competence that Ibn Tofayl had reached in the medical art. The details that he gave of the function of the organs effectively made him the first recorded physiologist.

Furthermore, he described blood circulation, thereby preceding its discovery by Ibn Nafis (d.1285C.E.) by a whole century. This poem was devoted to the promotion of health, the cure of diseases and the spread and diffusion of medical knowledge. It shows that from Ibn Tofayl's description he had his hand inside organs to describe them and demonstrate their physiological aspect. Precise geographical and topographical location of each organ illustrates his frequent dissections either when he was a student of medicine or in his time as a teaching physician. In his time the institution of pharmacy was created and developed allowing the composition of pharmacological treatises on new drugs and chemicals amongst them Indian hemp and other anaesthetic products in liquid or inhaled. Furthermore the invention of a new distillation apparatus permitted Ibn Tofayl to use a variety of pharmaceutical preparations in forms of essential oils, elixirs, tinctures, ointments, inhalants etc.

The physician was admonished to use his sense of smell, sight, hearing and touch to help in his diagnosis. The Urjuzah poem was used as a medical reference instead of Al Razi or Ibn Sina works as it remained the authority until 1934C.E when the French Protectorate Authority decided to close the Bimaristan (built in 1260C.E) in Fes and turn it into a market.

Finally we described the time of Ibn Tofayl, the encyclopaedic scholar, physician, poet, philosopher, politician and prolific writer. His works show the re-interpretation and reformation of the classical heritage. The results of this transmission of knowledge to Northern Spain, Southern France and Sicily are proven in the schools of Salerno and Montpellier. As for the East, the

best example could be gauged by the philosophical and medical works of Maimonides (Ibn Maymoun) who left Fes for Egypt in 1165C.E loaded with copies these revolutionary discoveries.

## References

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2. This technique is performed today in Fés hospital with success.
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