MICROBE IN MUSLIM SCHOLARS THINKING

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ABSTRACT
God creates the ultimate goodness for all ailments, but humans can deal with the conditions under which God works in order to create the most favorable conditions for the benefit of man. In this paper we focus on the learning the existence according to the Qur'an and Sunnah with specific reference to the existence of microbe, referring to some Muslim scholars, e.g. Abu Ali Ibn Sina (980-1037), who has contributed to the development of the germ theory of disease, and stated that bodily secretions are contaminated by foul foreign earthly bodies before being infected or after death. He also discovered the contagious nature of tuberculosis and other infectious diseases, and introduced quarantine as a means of limiting the spread of contagious diseases. When the Black Death bubonic plaque reached al-Andalus in the 14th century, Ibn Khatima (1369 AD) hypothesized that infectious diseases are caused by "minute bodies" which enter the human body and cause disease i.e. aware of germs theory; also Al, -Razi in "Kitab Hasbbati wa Judary" showed the differences between measles and small pox. We hope to present the idea that the existence of Islamic thought has existed since the 8th century. And we also take note that Allah created everything in its best form and microbe is one of its creatures. Allah is the Lord and Master of all existence.

Keywords:
Microbe, history, Qur'an and Sunnah, Muslim Scholars

INTRODUCTION

The Islamic scholars from west Asia believe that Unani-tibbi, also known as prophetic medicine, does not contradict the Qur'an and Sunnah. It traditionally makes use of a variety of techniques including diet, herbal treatments, manipulative therapies, and surgery to address human malady. Unani-tibbi is a complete system; the scholars cover all aspects of diseases, their causative agent (microbes and others), and all fields of medical care, from hygiene, nutrition and psychiatric treatment. Early hypotheses found are related to bacteriology and microbiology (Bashar Saad *et. al*, 2005). Their discovery of contagious disease in particular is considered revolutionary and is one of the most important discoveries in medicine (Sarton, 2008).The earliest ideas on contagion can be traced back to several hadiths attributed to Muhammad in the 7th century, who is said to have understood the contagious nature of leprosy, mange, and sexually transmitted disease (Lawrence and Dominik, 2000 and Michael W. Dols, 1983).

DISCOVERY AND ORIGINS OF MICROBE

Bacteria existed long before humans evolved, and bacterial diseases probably co-evolved with each species which involuntarily hosts them. Many bacterial diseases that we see today have been around for as long as we have, others may have developed later. In either case, somehow we were still unaware of the cause of infectious diseases. With the beginning of microbiology, bacterial pathogens became apparent.

During the medieval time of Europe, Muslim physicians, scientists and philosophers made significant contributions to biological knowledge between the 8th and 13th centuries during what is known as the "Islamic Golden Age". The biological sciences emerged from traditions of medicine and natural history reaching back to Aristotle and Galen in the ancient Greaco-Roman world, which were then further developed by Ibn Sina [Avicenna (980-1037)], Al Razi (841-926) and that became clear and approved in the 14th century by Ibn Khatima (1369) who first discovered bacteria and microorganisms. In Europe, it was observed by Antonie van Leeuwenhoek (1676) in the 17th century, (Who had to endure being called a mad man by those who believed that the reaction came only from chemistry) by using a single-lens microscope of his own design for the first time. The living 'minute bodies' being derived from the Greek (λεπτά φορείς) and then it was translated to Arabic (أجسام دقيقة or أحياء دقيقة), which was reported by Anton van Leeuwenhoek as "animalcules" small animals. The name "bacterium" was introduced much later, by Ehrenberg in 1828, derived from the Greek language also μικρό ραβδί meaning "small stick".

The name Unani-tibbi is something of a misnomer, as literally translated from the Arabic, it means Greek medicine. This is because the early Arab physicians took their basic knowledge from the Greeks. At the time, Greek medical knowledge was the best, particularly from Galen (130-200 AD), the renowned 2nd century Greek physician to the gladiators and Emperor Marcus Aurelius (121-180 AD). However, from that point onwards, Islamic medical scholars were responsible for many developments and advancements that, at 8th –10th century, placed Arabic medicine firmly in the vanguard of medical science. Thereafter, followed a steady stream of Muslim medical scholar, who not only upheld the high standards that came to be known as Unani-tibbi, but carried on adding to and improving the basic pool of knowledge (Bashar Saad *et. al*, 2005; Shealy, 1996; Edward Browne, 2002 & Morrow & John Andrew, 2011).

SOME NOTABLE SCHOLARS OF THE SCIENCE OF UNANI-TIBBI

Ali Bin Al Tabbari (838-870), Al Razi (Rhazes) Iran (841-926), Al Zahrawi (930-1013), Ibn Al Haitham (960-1040), Ibn Sina (Avicina) (980-1037), Al-Idrisi (1099) Cordova-Spain, Ibn Rushd-Averroes (1126-1199), Ibn Al Nafees (1213), Ibn Khaldun (1332-1395) and Ibn Khatima (1369 AD). (Philip 1970).

Some contributions introduced by Muslim scholars:

- Contamination of the body by "foreign bodies" prior to infection described by Avicenna.
- The description of how "minute bodies" enter the body and cause diseases by Ibn Khatima (well in advance of Pasteur's discovery of microbes).
- Ibn Khatima described tuberculosis as being a communicable disease.
- Meningitis was described by Avicenna in accuracy and such detail, that it has scarcely been added to after 1,000 years.

- Smallpox and measles were the first to be described by Al Razi. He was accurate to such a degree that nothing has been added since Edward Browne, (1921) and Haddad, (1993).

TWO LUMINARIES FROM WEST ASIA MUSLIM SCHOLARS

IBN SINA (AVICENNA)

Arabic Ibn Sina, in full Shiekh al-Ra'is Sharaf al- Mulk Abu 'Ali al-Husayn ibn 'Abd Allah ibn al-Hassan ibn Ali ibn Sina (Known in Europe as Avicenna) was born in the village of Afshana in the vicinity of Bukhara (in what is now Uzbekistan), in 370AH (980AD). The generally accepted date of an Ismailian family concerned with intellectual science and philosophical inquiry, all of which had its effect upon the most famous and influential of the philosopher-scientists and scholars of Islam. It was just around the time of Avicenna's birth and in the subsequent years that Islamic Arabic culture reaches its peak.

Since the Arabic language was the accepted vehicle for the transmission of knowledge in this era, Avicenna studied Arabic under Abu Bakr Ahmed b. Muhammad al- Barqi al-Khawarizmi. As soon as he had mastered Arabic (his mother tongue was Persian), his father found him a teacher of the Qur'an and another for literature. He knew the Qur'an and considerable amount of literature before he was 10 years old. Next, he developed an interest towards philosophy, geometry and Indian mathematics. He also studied Fiqh (Muslim law) and then he was attracted to medical science until he became an excellent scholar. In medicine, his great work, al-Qanun (The Canon of Medicine 1020), was translated into Latin towards the end of the 12th century AD, and became a reference for medical studies in the universities of Europe until the end of the 17th century.

The Arabic text of the Qanun was published in Rome in 1593 and was therefore one of the earliest Arabic books to see print. In recent years, a partial translation into English was made. From the 12^{th}-17^{th} century, the Qanun served as the chief guide to Medical Sciences in the West and is said to have influenced Leonardo da Vinci. In the words of Dr. William Osler, the Qanun has remained "a medical bible for a longer time than any others in the west. In the Canon of Medicine (1020), Abu Ali Ibn Sina (Avicenna) is the first who stated that bodily secretion is contaminated by foul foreign earthly bodies before being infected by any disease.

In summary, Avicenna has been described as possessing the mind of Goethe and the genius of Leonardo da Vinci. In the words of Sarton, he is the most famous scientist of Islam and one of the most famous of all races, places and times. Avicenna has been resting for more than one thousand years, but his ideas still cure the old and the young in the many hospitals that are built in his name in Iran and other Muslim countries as well as in the shattered land of his father, Afghanistan (Browne, 2002; Ynez Viole O'Neill, 1973; Philip K. Hitti, 1970 and Martin, 1983).

ABU-BAKR AL-RAZI

Abu-Bakr Muhammad ibn Zakariyya al-Razi was born in 865 AC in Iran. He is called al-Razi after the place of his birth, Rayy, near Tehran. He was a great scholar, who first studied and mastered music and then interested himself in philosophy. It was only at an advanced age that he took up the study of medicine and became one of the most renowned physicians of his time.

Al-Razi was a prolific writer. He wrote many books on medicine, physical science, chemistry, mathematics, astronomy and philosophy. But he is remembered most by the people

of the world for his love and interest in medicine and the number of important books he wrote on the subject. His works were translated in the West and they exercised a remarkable influence on Western scholars, by whom he is remembered to this day by the name of Rhazes.

Al-Razi was first appointed the Head of the State Hospital in the city of Rayy. Later, he was promoted to the post of the Chief Physician of the State Hospital, Bimaristan in Baghdad, the capital of the Abbaside Khalifahs. Here, he won high reputation in both the practice of medicine and surgery. He was a great investigator in the field of medical research, and his descriptions of the eye, the nose and the heart are considered even today as the most complete and authoritative. He was the first to describe smallpox and measles most accurately.

Al-Razi was an original thinker who liked to experiment with new ideas. As the Chief Physician of the State, he was once requested to choose a suitable site for the building of a hospital. He went around the city on an inspection tour and had pieces of meat hung in various localities of the city. From these he chose for the hospital site, the spot where the meat showed the least signs of decomposition. He was the author of some two hundred books of outstanding merit and he was the first to write the most accurate essays on contagious diseases. His Kitab al-Mansuri, which runs into ten volumes, is an Encyclopedia of Medicine. It was first translated into Latin in the 1480s.

In Al-Hawi, which is al-Razi's chief work in twenty volumes, he has written about every disease known at that period, basing his conclusions upon his own personal observations and extreme experiences. This work was first translated in Latin in 1542 AC. Al-Razi's works continued to remain the source of all chemical knowledge for centuries after his death, a fine example of a keen original thinker. He died in 925 AC. (Hitti, 1970; Ynez Viole O'Neill, 1973; and Philip K. & M.A. Martin, 1983).

OVERVIEW COMMENT

From all of the above considerations it is clear that Ibn Sina, (Avicenna), (980–1037) and some scholars contributed to science and philosophy during the middle ages, by their writings especially in The Canon of Medicine (1020) by Ibn Sina, which helped convey the thought of the Greek philosopher Aristotle to the thinkers of Western Europe, and his 'Canon of Medicine' became the definitive work in its field for centuries in Europe and the whole world including west Asia. His contribution in the germ theory of disease is a theory that proposes that microorganisms are the cause of many diseases. Also in 1300s -When the Black Death bubonic plague reached al-Andalus, Ibn Khatima discovered that infectious diseases are caused by microorganisms which enter the human body.

Al-Razi in "Kitab Hasbbati wa Judary" showed the differences between measles and small box. As a result, the Muslims in Turkey began vaccination for small-pox in 1679 AD. Another Andalusian physician Ibn Al-Khatib, in 1313 – 1374, wrote a treatise called On the Plague, in which he stated: "The existence of contagion is established by experience, investigation, the evidence of the senses and trustworthy reports. These facts constitute a sound argument. The fact of infection becomes clear to the investigator who notices how he who establishes contact with the afflicted gets the disease, whereas he who is not in contact remains safe, and how transmission is affected through garments, vessels and earrings" (Meta Existence Organization).

The Europeans gained this knowledge in the 18th century through lady Montague, the wife of the British Ambassador in Turkey. The Europeans then began vaccinations. Throughout medieval Europe, it was official Catholic dogma that diseases were the wrath of God and lastly Girolamo Farcastoro proposed in 1546 that epidemic diseases are caused by transferable seed-

like entities that could transmit infection by direct or indirect contact or even without contact over long distances.

In 1668, an Italian physician Francesco Redi provided proof against spontaneous generation. He devised an experiment in which he used three flasks. He placed a meat loaf in each of the three flasks. He had one of the flasks open, another one tightly sealed, and the last one covered with gauze. After a few days, he observed that the meat loaf in the open flask was covered by maggots, and the flask covered with gauze had maggots on the surface of the gauze. However, the tightly sealed flask had no maggots inside or outside it. He also noticed that the maggots were only found on surfaces that were accessible by flies. From this, he concluded that spontaneous generation is not a reasonable theory.

Anton van Leeuwenhoek (1632-1723), a Dutch tradesman and scientist from Delft, the Netherlands, who is considered the father of microbiology, came after 700 years and passing over all the Greek and Arab scholars (Dobell, C. (ed.) 1960). He is best known for his work on the improvement of the microscope and for his contributions towards the establishment of microbiology. Using his handcrafted microscope, he was the first to observe and describe single celled organisms, which he originally referred to as animalcules (Ford, B. J. 1991).

No culture in the world is immuned from the process of reception and assimilation. The Arabs, emerging as an 'Iqra-community (Reading and Research community), as a victorious and conquering force, came in touch with Greek, Iranian and Indian medical systems in the conquered lands. They studied them and preserved them. They, in fact, saved the works of the Greeks from extinction, at the hands of the early churches and gave it a scientific basis. The Greeks were more speculative and neglected experiment and observation. The discovery of pathogenic minute (unseen) living things and the institutions of medical teachings and research were established by the Arabs who wrote books on medicine and surgery and laid the foundations of the renaissance in Europe. Briffault writes in the 'Making of Humanity', that science owes a great deal more to the Arab culture; it owes its existence to Arab scientists, who made startling discoveries of revolutionary theories. He says that 'the Greeks systematized, generalized and theorized, but the patient ways of investigation, the accumulation of positive knowledge, the minute methods of science, detailed and prolonged observations, experimental enquiry, altogether alien to the Greek treatment, that spirit (of inquiry) and those methods were introduced into the European World by the Arabs'. 'The rise of Europe came after the capture of Muslim Empire and their intellectual, scientific and cultural treasures as booty. Even the tenth century Cordova was the most cultured city in Europe and so were Baghdad and Constantinople', (Philip K. Hitti 1970), the renowned author of the "History of Arabs". European libraries today preserve the scientific works of nearly 400 scientists who were either Muslims or were produced by the Arab universities of Cairo, Cordoba, Grenada and Baghdad.

CONCLUSION

God created everything good and with a purpose, even bacteria and viruses in the world. It is true that we first learned about bacteria and viruses because of the problems they cause. Bacteria have been studied in considerable detail since 1300s -When the Black Death bubonic plague reached al-Andalus, Ibn Khatima discovered that infectious diseases are caused by microorganisms when entering the human body. Then in 1313 – 1374, Ibn Al-Khatib also wrote on the Plague and now recognized to be mainly helpful and absolutely essential for life on earth; Bacteria plays important roles in the ecosystem, both on land and in the water. The cycling of nutrients such as carbon, nitrogen, and sulfur is completed by their ceaseless labour and also in

biomedicine such as probiotic, bacteria that causes disease (which occurs as a result of the plunge and they change their place to survive) are the exceptions, not the rule.

Allah is never "done" with His work, because the process of creation is ongoing. Each new child who is born, every seed that sprouts into a sapling, every new species that appears on earth, is part of the ongoing process of Allah's creation. The most important concept is the idea that there is no such thing as a random event, and that everything happens according to God's will. After completing the Creation, the Qur'an describes that Allah "settled Himself upon the Throne" (57:4) to oversee His work.

There is no doubt that such a spirit of inquiry was inculcated amongst the Muslim scholars by the Qur'an (the Holy Scripture of Muslims) and the Sunnah (sayings, deeds and approvals of the prophet of Islam). The Qur'an urges humans to overpower the forces of nature for the benefit of man, his health and growth. The Qur'an makes it clear that all that is in the heaven and on earth have been made subservient to man, the vicegerent of Allah.

The training of specialists of high caliber in every field and region and understanding the necessary scientific and technical facilities in Islamic societies is very important. It is clear that the reason of the decline of Muslim societies in the 13th and later centuries produced no Muslim scientist worth their name is the rejection of the framework of understanding in accordance with the Qur'an and Sunnah. Muslims became secular in their approach rather than being submissive. They began to follow others instead of taking lead. They began to go into the grammar and language of science rather than pursuing new penetrating ideas. Muslim scholars began to ride the wave of non- believer's sciences (cloning and biotechnology) and they actually sell out their Islamic values. The past Arab scholars had discovered a lot, and its legacy is a resource to be honored and used in the modern age.

Islam is a religion in which all Muslims have no shreds of doubt about the Oneness or Tawhid of the almighty God, the authenticity of the Holy Qur'an, the Divine message of Prophet Muhammad (sallallahu, alayhi wa sallam) and other messengers. Just as they all face the same direction to Kiblah in their daily prayers, they hold to the same worldview and way of life, Muslims should prepare themselves in every way to defend themselves against the non-believers as stressed by the following verse:

> [*And prepare against them what force you can...so that you may dismay the enemy of God and your enemy and others beside them whom you know not; God knows them. Whatever you spend in the way of God it will be repaid to you in full, and you will not be cheated*]. (8:60)

As Prophet Mohamed (sallallahu, alayhi wa sallam) said:

> [*Anyone who seeks knowledge not for the sake of God and uses it not in the way of God should be certain of his place in hell*].

We had come to the conclusion that all thoughts and writing about science and microbe as one of the creatures of God should be through a healthy belief in Allah's creative power to make whatever He wills in whatever way He wishes. It is clear that, in this verse, creation, the blowing of the Divine breath and the veneration of angels is ascribed to all human beings in general. The Qur'an states in the Sura Alif lam sajdah:

> *[...Who has created all things well and He originated the creation of man out of clay, then He fashioned his progeny of an extraction of mean water, then*

He shaped it, and breathed His spirit in it. And He appointed for you hearing and sight, and heart; little thanks you show]. (32:7-9)

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