

ISLAM AND MODERN SCIENCE: AN ANALYSIS OF THE CONTRIBUTIONS OF THE MEDIEVAL MUSLIM SCHOLARS TO MEDICAL SCIENCE

Dr. Muhammad Obaidullah*

ABSTRACT

The primary objective of this paper is to depict the real-time contributions made by the Muslim scientists and researchers in the area of medical science during the medieval period. Many inscribed write-ups, books and Encyclopedias have been written and published on the various areas of medical science by the eminent Muslim scholars during the medieval period. It is acknowledged by the prominent scientists, historians and philosophers that the contributions of Muslim researchers prevalently shaped the science and philosophy into the form that we see it today. However, there is a tendency in the western society to ignore the contribution of Muslim scientists in the historical development of medical science. Western writers have given little prominence to Islamic Scientific and intellectual contributions to this field. But the fact is that the Muslims carried the torch of science in an age when no other civilization was capable of doing so. The current study would also shed light on the underlying reasons as to why Muslims today are not able to contribute to the development of sciences including the medical science like their golden age. This will conclude by furnishing some suggestions to improve the current devastating state of Muslims in the development of sciences. The methodologies applied in this study are descriptive and analytic.

Keywords: *Science, Medical Science, Scientist, West, Islam & Muslim,*

1. INTRODUCTION

From the very beginning Islam encouraged the pursuit of science and favored progress. The Prophet persuaded Muslims to acquire knowledge as he said that “*to seek knowledge*

*Assistant Professor of Islamic Studies, CGED, Manarat International University, Gulshan, Dhaka, Bangladesh, Email: obaidiub@yahoo.com

is a duty for every Muslim man and woman." (Ibn Majah, Hadith no. 224) The science, obviously, is considered to be the most important branch of knowledge. According to this encouragement, the Muslim scientists have given the more importance to this field. As the Medical science is an enormous branch of Modern science, Muslim scientists have possessed a magnificent contribution to this branch of knowledge, specially, during the medieval period. In fact, the contribution of Muslim scientist led the way toward the European renaissance during the 14th to 16 centuries. A comprehensive survey of the Muslim contributions would indeed need a voluminous work. But in this paper, we would refer to a few of them such as: the condition of Medical science in the pre-Islamic times, the real contributions of Medieval Muslim scientists to this field and finally the shading light on underlying reasons as to why Muslim scientists nowadays are not able to contribute to the development of Medical science like their golden age and concluding by furnishing some implications to improve the present shocking situation of Muslim in this field.

1.1. Objectives of the Study

The objectives of the study are as follows:

- i. To study the contribution of medieval Muslim scientists to the medical science.
- ii. To study the reason behind the fall of Muslim scientists.
- iii. To find out the solutions towards overcoming the present situation.

1.2. Literature Review

It is dishearten to learn the situation of Muslims decline is not only in every section of modern science but also in all branches of knowledge. In a time, they were in a leading position especially in the mediaeval period. It is noted that the medical knowledge in the pre-Islamic times was negligible, due to the unsettled, nomadic, desert environment the Arabs lived in. Prophet Muhammad (pbAuh) contributed a lot to each and every branch of knowledge. He also encouraged His companions to do that. Therefore, the first Muslim physician is believed to have been Muhammad (pbAuh) himself, as a significant number of *hadiths* concerning medicine are attributed to him. (... , Tibb al-Nabi (pbAuh)) Several *Sahaba* are said to have been successfully treated of certain diseases by following the medical advice of Muhammad (sm.)(Deuraseh, 2003). Muhammad also appears to have been the first to suggest the contagious nature of leprosy, manage and sexually transmitted disease; (Lawrence I. Conrad and Dominik Wujastyk, 2000) and that there is always a cause and a cure for every disease. (Deuraseh, 2003).The belief that there is a cure for every disease encouraged early Muslims to engage in biomedical research and seek out a cure for every disease known to them (Deuraseh, 2003). Not only that but also, in the history of Islam, there were so many scientists who contributed a lot to the medical science. Most of them are considered as father or pioneer of that particular fields of Medical science. For examples, Ibn Sina (980-1037) is considered as the father of modern medicine (Cesk, 1980) and he was the first to describe the surgical procedure of intubations in order to facilitate breathing. (Skinner, 2001), first major work of Islamic

medicine was written by al-Tabari (838–870), the pioneer of clinical and observational physician was al-Razi (846–930) (Ibid.) who invented and described the nature and causes of Smallpox, Allergic Asthma etc. (Ibid.), in urology, Ibn-Rushd identified the issues of sexual dysfunction and erectile dysfunction, and was among the first to prescribe medication for the treatment of these problems. (A. Al Dayela and N. al-Zuhair, 2006, pp. 253-254), Ibn Zuhr (991-1061) was a physician who gave the first accurate descriptions on neurological disorders, including meningitis, intracranial thrombophlebitis, and mediastina tumors, and made contributions to modern neuropharmacology. (Martin-Araguz, et. All., 2002), Abu al-QasimKhalaf ibn al-Abbas Al-Zahrawi (936-1013) is considered the father of modern surgery (Martin-Araguz, 2002), Hasan Ibn Al-Hitham (965-1039) is considered the father of optic for his influential *Book of Optics*. (Al-Deek, 2004), Ibn Zuhr (911-961) is considered as the father of experimental surgery(Rabie, 2005).

However, Today's situation of Muslim scientists may make the people confused about their contribution to every branch of modern time. If you ask educated Muslims about their glorious history, most of them can't tell you anything about it. It is because of many reasons. Among them, fall of Muslim kingdoms, (Ibn Khaldun, *Al-Muqaddima*), negative attitude of Muslim theologians(Sarton, 1975), establishment of Madrasah system, (Sayili, 1981), crusades (Lewis, 1977), Conspiracy of Muslim's enemies (Al-Duri, nd.), The Mongol Emperor(Ibn Kathir, 1982) and the decline of Othman emperor(Maundrell, 1963) are mentionable. Moreover, not much literature could not be found in this field. Academic attention has not been drowning also to explore the contribution of Muslims to the medical science. Therefore, academic attention should be given more and more to study the contribution of Muslim scholars and scientists to the various fields of knowledge. It would definitely inspire the future Muslim generation to revive their glorious history again.

2. METHODOLOGY

This paper is based on secondary sources of data. The data thus collected from library, books, journals, other internet sources to depict the result. All data have been studied critically and analyzed carefully to achieve the objectives of the study. Therefore, the results have been presented descriptively.

3. FINDINGS AND ANALYSIS

3.1. Contribution of Medieval Muslim Scholars to Medical Science

Muslim scientists have enormous contribution not only to Medical science but also other branches of modern sciences. Few of the them are pioneers in such particular fields. The following discussion would show the real-time contributions of medieval Muslim scholars to various sections of medical sciences:

3.1.1.Medicine

The contributions which the Muslims had made by the discoveries and developing of new drugs and therapeutic agents are great in number as well as in value. The following information would provide us the real contribution of Muslim scientists to this field.

The first name can be mentioned here as he is considered as the father of modern medicine is Abu `Ali al-Husayn ibn `Abd Allah ibn Sina (980-1037). (Cesk, 1980) Particularly for his introduction of systematic experimentation and quantification into the study of physiology, (Siraisi, 1990) his discovery of the contagious nature of infectious diseases, the introduction of quarantine to limit the spread of contagious diseases, the introduction of experimental medicine, evidence-based medicine, clinical trials, randomized controlled trials, (Eldredge, 2003) efficacy tests, (Brater, 2000) clinical pharmacology, (Ibid) neuropsychiatry, (Abbasi, Brasiliense & Workman, 2003) risk factor analysis, the idea of a syndrome, (Goodman, 2003) and the importance of dietetics and the influence of climate and environment on health. (Ibn Sina, 2003) "The Canon of Medicine" is considered a great work in medical science. George Sarton, the father of the history of science, wrote in the *"Introduction to the History of Science"*: "... His most important medical works are the *Qanun (Canon)* and a treatise on Cardiac drugs. The *'Qanun fi-l-Tibb'* is an immense encyclopedia of medicine." (Sarton, 1975) *The Canon of Medicine* was the first book dealing with experimental medicine, evidence-based medicine, randomized controlled trials, (Eldredge, 2003) and efficacy tests, (Daly & Brater, 2000) and it laid out some rules and principles for testing the effectiveness of new drugs and medications, which still form the basis of clinical pharmacology and modern clinical trials.

Another name can be mentioned here is `Ali ibn Rabban al Tabari (838–870). He was the author of the first major work of Islamic medicine. He is a convert to Islam, who wrote his *"Paradise of Wisdom" (Firdaus al-hikmah)* in 234 AH/850 AD. (Nasr, 2007) In 360 chapters, he summarized the various branches of medicine, devoting the last discourse, which consists of 36 chapters, to a study of Indian medicine. The work, the first large compendium of its kind in Islam, is of particular value in the fields of pathology, pharmacology and diet, and clearly displays the synthetic nature of this new school of medicine, now coming into being. (Ibid.)

Abu Bakr Muhammad ibn Zakariya Razi (846–930), al-Tabari's student, was without doubt the greatest clinical and observational physician of Islam. As he was the chief in the main hospital at Baghdad in Iraq, he gained much practical experience, which played no small part in making him the greatest clinician of the medieval period. (Ibid.) As a chief physician of the Baghdad hospital, Razi formulated the first known description of **smallpox**. *Hisal-Judariwa al-Hasbah* was the first book describing smallpox and measles, and was translated more than a dozen times into Latin and other European languages. Razi also for having discovered "**allergic asthma**," and was the first physician ever to write articles on allergy and immunology. Razi was the first to realize that fever is

a natural defense mechanism, the body's way of fighting disease. (Ibid.) He is considered as the father of pediatrics for writing *The Diseases of Children*, the first book to deal with pediatrics as an independent field of medicine. (Ibid.).

In the biomedical sciences, Abu Rayhan Muhammad ibn Ahmad al-Biruni's (973-1048) *Kitabal-Saidana fi al-Tibb* was an extensive medical and pharmacological encyclopedia which synthesized Islamic medicine with Indian medicine. His medical investigations included one of the earliest descriptions on Siamese twins. (Zahoor, 1997) The *Kitab-al-Saidana* was also a *materiamedica* which was celebrated for its in-depth botanical studies of minerals and herbs. (Scheppler, 2006) It was the earliest to describe the eating of several fungi, including truffles, which are a type of hypogenous fungi. (Kiple, 2001)

Ibn al-Baitar (1248) was a famous medieval Muslim scientist. He is considered one of the greatest botanists however he has an enormous contribution to Medicine. His major contributions are *Kitab al-Jami fi al-Adwiya al-Mufrada* and *Kitab al-Mlughni fi al-Adwiya al-Mufrada*.

Al-Kindi (801-873) is another famous medical scientist in medieval era. More than 30 treatises attributed to him in the field of medicine. Al-Kindi's most important work is *De Gradibus*, in which he demonstrates the quantification to medicine, particularly in the field of pharmacology. (Klein-Frank, 2001) In his *Treatise on Diseases Caused by Phlegm*, he provided the first scientific explanation and treatment for epilepsy. (Ibid.) In his *Aqrabadhin (Medical Formulary)*, he describes many pharmaceutical preparations, including simple drugs derived mostly from botanical sources as well as animal and mineral sources. (Ibid.)

Ibn-Rushd (1126-1198AD) contributed a lot to the field of medicine. In urology, Ibn-Rushd identified the issues of sexual dysfunction and erectile dysfunction, and was among the first to prescribe medication for the treatment of these problems. (A. Al Dayela and N. al-Zuhair, 2006) He wrote a medical encyclopedia called *Kulliyat* (general medicine), known in its Latin translation as *Colliget*. He also wrote a commentary on *The Canon of Medicine (Qanun fi 't-tibb)* of Ibn Sina (980-1037).

Ibn al-Jazzar (979) devoted himself to the study and practice of medicine. Ibn al-Jazzar was a prolific author in the field of medicine; his writings earned him great fame and made him very influential in medieval Western Europe. His "*Kitab al-adwiya al-mufrada*" (Treatise on Simple Drugs) was translated into Greek, Latin and Hebrew and was frequently copied. Latin translation of his book entitled "*Liber de gradibun*" became one of the most popular pharmacopoeias in the Latin West. His *Tibb al-fuqara' wa al-masakin (Medicine for the Poor)* represents a literary topic which became especially popular during the Middle Ages.

The famous book *Al-Shamil fi al-Tibb (The Comprehensive Book on Medicine)* is a medical encyclopedia which Ibn al-Nafis (1213-1288) begun immediately after he completed his *Commentary on Anatomy in Avicenna's Canon* in 1242. (Iskandar, 1997) His short book on Medicine titled "*Al-Mujaz fi al-Tibb (A Summary of Medicine)*". He introduced the use of vinegar, which is still used for ear infections in modern times. His other medical works include the *Risalat al-A'ada'a (An Essay on Organs)* and *Al-Shamel fi al-Tibb (Reference Book for Physicians)*. (Ibid.).

Ibn Zuhr (1091-1161) performed the first parenteral nutrition of humans with a silver needle, and wrote a book on it entitled *The Method of Preparing Medicines and Diet*. He also developed the drug therapy and medicinal drugs for the treatment of specific symptoms and diseases like other Muslims scholars. His use of practical experience and careful observation was extensive. (Ajram, 1992).

3.1.2. Physiology

There is a mentionable contribution of medieval Muslim scientists in this branch of Medical science. For example, beside his contribution to medicine, Razi's skills in prognosis, and his analysis of the symptoms of a disease, its manner of treatment and cure, have made his case studies celebrated among later physicians. Razi himself recorded some of the more unusual cases he encountered during his medical practice. (Browne, 1902)

Ibn Nafis (1213-1288) was a heart specialist physician. He was the chief physicians at the Al-Mansouri hospital in Egypt. (Iskandar, 1997) Ibn Nafis describes about pulmonary circulation which was a new explanation in his time. In describing the anatomy of the lungs, Ibn al-Nafis stated:

"The lungs are composed of parts, one of which is the bronchi; the second, the branches of the arteria venosa; and the third, the branches of the vena arteriosa, all of them connected by loose porous flesh." (Ibid.)

Ibn al-Nafis discovered the coronary circulation, the second phase of the circulatory system. He was the first to realize that the nutrition of the heart is extracted from the small blood vessels passing through its wall. (Nagamia, 2003) He is also discovered a precursor to the "capillary circulation in his assertion that the pulmonary vein receives what comes out of the pulmonary artery, this being the reason for the existence of perceptible passages between the two." (Ghaliungui, 1982) Another correction he made concerned the incorrect Galenic and Avicennian *theories of bones* being present beneath the human heart. Ibn al-Nafis made correction concerning human Muscles. (Ibid.) He also corrects another theory on the Nerves stated by Ibn Sina.

Ibn Zuhr (991-1061) was a physician who gave the first accurate descriptions on neurological disorders, including meningitis, intracranial thrombophlebitis, and mediastina tumors, and made contributions to modern neuropharmacology. (Martin-Araguz, et. All., 2002)

3.1.3. Pharmacy

So far as pharmacy is concerned, the Muslims scholars rendered valuable service. They found out the pharmacology of rhubarb, camphor and sienna. They practiced the use of hyoscyamus in medicine. For example, Al-Razi (Rhazes) (846–930) contributed in many ways to the early practice of pharmacy by compiling texts, in which he introduces the use of 'mercurial ointments' and his development of apparatus such as mortars, flasks, spatulas and phials, which were used in pharmacies until the early twentieth century.

Ibn Sina (980-1037) was a pioneer in posology and sphygmology. His contribution to Pharmaceutical sciences includes the experimental medicine, evidence-based medicine, clinical trials and clinical pharmacology; the first careful descriptions of skin troubles, sexually transmitted diseases, perversions and nervous ailments; as well as the use of ice to treat fevers, and the separation of medicine from pharmacology, which was important to the development of the Pharmaceutical sciences. (Bashar Saad, Hassan Azaizeh, Omar, 2005) He was often capable of finding the symptoms of certain diseases only by feeling a patient's pulse. (Hakki, 2001).

In pharmacy and pharmacology, Abu al-Qasim al-Zahrawi(936-1013)pioneered the preparation of medicines by sublimation and distillation. His *Liber Servitoris* is of particular interest, as it provides the reader with recipes and explains how to prepare the 'simples' from which were compounded the complex drugs then generally used. (Levey M., 1973)

Ibn Zuhr(991-1061) (and other Muslim physicians such as *al-Kindi, Ibn Sahl, Abulcasis, al-Biruni, Ibn Sina, Averroes, Ibn al-Baitar, Ibn Al-Jazzar and Ibn al-Nafis*) developed drug therapy and medicinal drugs for the treatment of specific symptoms and diseases. His use of practical experience and careful observation was extensive. (Ajram, 1992)

3.1.4. Diagnosis and Treatment

Diagnosis and treatment are the significant parts of medical science. Medieval Muslim scientists have a mentionable contribution to this field. They developed the ancient system of Diagnosis and Treatment in the medieval period.

Ibn Sina (980-1037) dedicated a chapter of *the Canon* to blood pressure. He was able to discover the causes of bleeding and heamorrhage, and discovered that heamorrhage could be induced by high blood pressure because of higher levels of cholesterol in the blood. This led him to investigate methods of controlling blood pressure. (Hakki, 2001) Ibn Sina

also distinguished between *mediastinitis* and *pleurisy*, provided careful descriptions of skin troubles, perversions, and nervous ailments." (Ibid.) He also described the first known treatments for *cancer*. (Skinner, 2001) In cancer therapy, Ibn Sina recognized cancer as a tumor. He noted that a "cancerous tumor progressively increases in size, is destructive and spreads roots which insinuate themselves amongst the tissue elements." (Sari, 2007)

Like Ibn Sina, Ibn al-Baitar discovered the earliest known herbal treatment for cancer: "*Hindiba*", a herbal drug which he identified as having "anticancer" properties and which could also treat other tumors and neoplastic disorders. (Sari, 2007)

3.1.5. Anatomy

Contributions of medieval Muslims scientists to anatomy are as follows:

Writings on anatomy in the *Canon of medicine* are scattered throughout the text in sections regarding to illnesses related to certain body parts. The *Canon* included numerous discussions on anatomy and diagrams on certain body parts, including the first diagrams of the cranial sutures.

Ibn Nafis's (1213–1288) gigantic work in this field is "*Sharh Tashrih al-Qanun Ibn Sina*" (*Commentary on Anatomy in Avicenna's Canon*) is considered one of the best scientific books in which he covers in detail the topics of anatomy, pathology and physiology. (Iskandar, 1974) Another Muslim scientist *Yuhanna ibn Masawayh*, while writing his book on anatomy procured monkeys from Caliph *Mu'tasimillah* for anatomical dissection. He fully operated upon them to make his knowledge sounder and to get more information about the human body. Ibn al-Qifti says that Yuhanna first intended to sacrifice his own son to perform these experiments, but the Caliph stood in his way and sent him the monkeys. (Mirza, 2003)

3.1.6. Surgery

Like other fields of medical science, medieval Muslim scholars contributed a lot to surgery. In this regard, Abu al-Qasim Khalaf ibn al-Abbas Al-Zahrawi (936 - 1013) is considered the father of modern surgery (Martin-Araguz, 2002) and as Islam's greatest medieval surgeon, whose comprehensive medical texts shaped both Islamic and European surgical procedures up until the Renaissance. In his *Al-Tasrif (The Method of Medicine)*, he introduced his famous collection of over 200 surgical instruments. Many of these instruments were never used before by any previous surgeons. Abu al-Qasim's use of catgut for internal stitching is still practiced in modern surgery. (Hehmeyer & Khan, 2007) Other surgical instruments invented by him include the scalpel, curette, retractor, surgical spoon, sound, surgical hook, surgical rod, and specula. (Al-Hadidi, 1978)

Ibn Sina (980-1037) was the first to describe the surgical procedure of intubations in order to facilitate breathing. (Skinner, 2001) Moreover, Hasan Ibn Al-Hitham (965-1039) was an eye specialist. He is considered the father of optic for his influential *Book of Optics*.

He correctly explained and proved the modern intromission theory of vision. His experiments on optics, including experiments on lenses, mirrors, refraction, reflection, and the dispersion of light into its constituent colours consider him as the pioneer of this field. (Al-Deek, 2004)

One of the three surviving manuscripts (vol. 33, 42 & 43) of *The Comprehensive Book on Medicine* written by Ibn al-Nafis (1213-1288) is dedicated to surgery, and is divided into three *talim*. The first *talim* is twenty chapters in length and deals with the "general and absolute principles of surgery", the second *talim* deals with surgical instruments, and the third examines every type of surgical operation known to him. (Iskander, 1982)

Ibn Zuhr (911-961) is considered as the father of experimental surgery. In this field, his *al-Taisir* is most famous work. (Rabie, 2005) He was the first to employ animal testing in order to experiment with surgical procedures before applying them to human patients. (Ibid.) He also performed the first dissections and postmortem autopsies on humans as well as animals. He invented the surgical procedure of tracheotomy. (Shehata, 2003) He established surgery as an independent field of medicine, by introducing a training course designed specifically for future surgeons. (Rabie, 2005)

3.2. The Reasons behind the fall of the Muslim Scientists

According to our above discussion, it is proved that the Muslim scientists did an enormous performance to various fields of medical science in medieval period. But, today's Muslim scientists they have not any mentionable contribution to this field. Thus this question may come to rise that why they could do that and presently are not able to contribute to the development of science like their golden age? The main reason for fall of the Muslim *Ummah* not only in sciences but also in every step of their lives is forgetting the teaching and command of the holy Qur'an and Allah's messenger prophet Muhammad (sm.). They forget their originality and their spiritual sources. Moreover, there are some other reasons. For examples:

- i. **Fall of Muslim Kingdom:** In his famous book "*Al-Muqaddima*", Ibn Khaldun discusses the factors which lead to decline of Muslim scientists. He remarks that when the empire became established, and when Islamic civilization surpassed all others, Muslims studied eagerly the rational sciences of the ancients until they excelled over them. The ideas of Ibn Khaldun are repeated by modern scholars.
- ii. **Negative attitude of Muslim Theologians:** Some modern writers argue that the reason for fall of Islamic science and Muslim scientist was caused by the negative attitude of Muslim theologians. (Sarton, 1975) This is the most important reason behind the decline of Muslim scientists.
- iii. **Establishment of Madrasah System:** Another reason for fall of Islamic science after 15th centuries is the Madrasah system which is argued by some modern writers. The Madrasah system which flourished after the founding of the

Nizamiyya Madrasa in Baghdad by Nizam al-Mulk in 459/1067 favoured only the study of theology and law. (Sayili, 1981) Most of the madrasahs were established by persons in power or by pious and wealthy individuals who endowed a part of their wealth to a *waqf* which supported the school. The purpose was always religious, and the studies were naturally mainly those of law and theology. (Makdisi, 1980)

- iv. **Crusades:** Another most important reason is Crusades. Between 1096 and their final defeat in 1291 no fewer than seven Crusades were mounted against the Arab lands. These crusades in 1096, 1149, 1189, 1204, 1218, 1244 and 1250 destroyed the power and capacities of Muslims towards contributing to the knowledge. (Lewis, 1977)
- v. **Conspiracy of Muslim's Enemies:** The most important thing is the enemies of Islam and Muslim were trying to destroy the asset of Muslim and Islam. For example, in 1012, Halaqu Khan attacked Baghdad and destroyed all signs of Islam and Muslim including the Main library of Baghdad. He also brought the all books written by Muslims scholars to his country. The conspiracy still exists.
- vi. **The Mongol Emperor:** The Mongol Emperor is another most important factor for the fall of Islamic science and civilization. (Ibn Kathir, 1982) In February 1258, Baghdad fell into the hand of Mongol. The Abbasid caliph al-Muta`sim was killed and the caliphate was abolished. This marked the end of a remarkable era in Islamic civilization. The most disastrous effect of the Mongol invasion was depopulation. The number of inhabitants who were slaughtered in Baghdad probably exceeded 100,000. (Al-Duri, nd.)
- vii. **The decline of Othman Emperor:** It is another important factor for fall of Muslim scientists. In the period of the Ottoman's Khilapat, Muslims were in rise of civilizations. But after the decline of the Ottoman's Khilapat, Muslim had lost their power. So, it is true to say that the Ottoman and Islamic civilization in general developed unaided until it reached the point where it could not develop any longer without a great new advance or a revolution in science and technology. (Maundrell, 1963)

4. RECOMMENDATIONS

Some Proposed guidelines to improve the current devastating state of Muslim scientists:

- ⇒ We, especially Muslim scientists, must follow the teaching of holy Qur`an and tradition of our Prophet Muhammad (sm.). It will surely inspires them to contribute more to each and every branch of knowledge.
- ⇒ We should remember our originality and the object of the Creator. This will enable the *Ummah* to eliminate all the evils that have crept in modern sciences and arts and modern civilization and culture.
- ⇒ It must be clear that what has to be imbibed from the West is only the knowledge about experimental sciences, industry and technology and never their ideologies and philosophies.

- ⇒ The panacea for all ills the Muslim Ummah is suffering today is powerful and purposeful striving. This striving should be in the fields of acquiring knowledge, producing arguments utilizing reasoning, science and industry and in culture and civilization.
- ⇒ If need be, all resources have to be utilized without a second thought. Otherwise the revival of the religion and *Ummah* cannot be caused and achieved.

5. CONCLUSION

We would like to conclude this with the saying that Islam is not merely a religion; Muslims are not a name of nation. As a Muslim always we should try to ensure the establishment of the object of Allah to create us and give us the Din al-Islam, as he says: "*Ye are the best of Peoples, evolved for mankind, enjoining what is right, forbidding what is wrong, and believing in Allah.*" (Al-Qur`an, Surah al-`Imran, verse no: 110.) He also states to make clear the object of Din al-Islam: "*It is He Who has sent His Messenger with Guidance and the Religion of Truth, that he may proclaim it over all religion, even though the Pagans may detest (it)*". (Al-Qur`an, Surah as-Saff, verse no: 9.)

REFERENCES

- Ajram, Dr. Kasem. (1992). *Miracle of Islamic Science*, Appendix B. Knowledge House Publishers
- Al Deek, Dr. Mahmoud. (2004). "Ibn Al-Haitham: Master of Optics, Mathematics, Physics and Medicine" in *Al Shindagah*.
- Al-Hadidi, Khaled. (1978), *The Role of Muslem Scholars in Oto-rhino-Laryngology, The Egyptian Journal of O.R.L.* 4 (1), p. 1-15.
- Aydin, Professor Dr. Ibrahim Hakki. (2001). "Avicenna And Modern Neurological Sciences" in *Journal of Academic Researches in Religious Sciences* 1 (2).
- Benamer, Mohamed Hussein. (2005). *Ibn Al-Nafis and Vinegar*. See: <<http://en.wikipedia.org/wiki/Ibn_al-Nafis>> Accessed on October 25, 2014.
- Brater, D. Craig and Daly, Walter J. (2000). "Clinical pharmacology in the Middle Ages: Principles that presage the 21st century", in *Clinical Pharmacology & Therapeutics*-67 (5).
- Browne, Edward G. (1902). *A literary History of Persia*, 4 vols. London: T. Fisher Unwin, and Cambridge University Press.
- Cesk, Cas Lek. (1980), *The father of medicine, Avicenna, in our science and culture: Abu Ali ibn Sina (980-1037)*, *Becka J.* 119 (1).
- Conrad, Lawrence I. and Wujastyk, Dominik. (2000). "*Contagion: Perspectives from Pre-Modern Societies,*" *A Ninth-Century Muslim Scholar's Discussion*, Ashgate.
- David W. Tschanz. (2003). "Arab Roots of European Medicine" in *Heart Views* 4 (2).
- Dayela, A. Al and al-Zuhair, N. (2006). "Single drug therapy in the treatment of male sexual/erectile dysfunction in Islamic medicine" in *Urology* 68 (1).

- Deuraseh, Nurdeen. "Ahadith of the Prophet (s.a.w) on Healing in Three Things (al-Shifa' fi Thalatha)" *In An Interpretational, Journal of the International Society for the History of Islamic Medicine*, 2003 (4).
- Eldredge, Jonathan D. (2003). "The Randomised Controlled Trial design: unrecognized opportunities for health sciences librarianship" in *Health Information and Libraries Journal*-20.
- Ghalioungui, Dr. Paul. (1982). "The West denies Ibn Al Nafis's contribution to the discovery of the circulation", *Symposium on Ibn al-Nafis*, Second International Conference on Islamic Medicine: Islamic Medical Organization, Kuwait.
- Goodman, Lenn Evan. (2003). *Islamic Humanism*. Oxford University Press.
- Guilmartin Jr., John Francis. (1974). *Gunpowder and Galleys*. Cambridge.
- Hehmeyer, Ingrid and Khan, Aliya. (2007). *Islam's forgotten contributions to medical science, Canadian Medical Association Journal* 176 (10).
- Ibn Kathir. (1982). *Al-Bidayawa-l-nihaya*. Beirut, Arabic edition, vol. XIII.
- Ibn Majah, Muhammad ibn Yazid, *Sunan Ibn Majah*, BabuFadlu al-`Ulamauoahassu `ala al-`Ilm, (Bayrut: Dar al-Fikr), Hadith No. 224, Vol. 1, p. 82.
- Ibn Sina. (2003). *The Canon of Medicine*. USA: The American Institute of Unani Medicine.
- Iskandar, Albert Z. (1997). "Ibn al-Nafis", in Helaine Selin, *Encyclopaedia of the History of Science, Technology, and Medicine in Non-Western Cultures*. Kluwer Academic Publishers.
- Iskandar, Albert Z. (1997). "Ibn al-Nafis", in Helaine Selin, *Encyclopaedia of the History of Science, Technology, and Medicine in Non-Western Cultures*. Kluwer Academic Publishers.
- Kiple, Kenneth F. &KriemhildConee Ornelas. (2001). *The Cambridge World History of Food*. Cambridge University Press.
- Levey M. (1973). *Early Arabic Pharmacology*. Accessed on October 22, 2014. See: <<<http://en.wikipedia.org/wiki/Al-Zahrawi>>>
- Makdisi, George. (1980). "On the Origin and Development of the College", in *Islam and the West* in *Articles in Islam and the Medieval West*, ed. by Khalil I. Semaan. New York.
- Martin-Araguz, A., Bustamante-Martinez, C., Fernandez-Armayor, Ajo V., Moreno-Martinez, J. M. (2002). *Neuroscience in al-Andalus and its influence on medieval scholastic medicine, Revista de neurologia* 34 (9).
- Maundrell, Henry. (1963). *Journey from Aleppo to Jerusalem*. Beirut: Khayat.
- Mirza, Dr. Mohamad and Iqbal Siddiqi, Muhammad. (2003). *Muslim contribution to science*. New Delhi: Adam Publishers & Distributors.
- Nagamia, Husain F. (2003). "Ibn al-Nafis: A Biographical Sketch of the Discoverer of Pulmonary and Coronary Circulation", *Journal of the International Society for the History of Islamic Medicine* 1.

- Nasr, Seyyed Hossain. (1974). "Islamic Conception of Intellectual Life", in Wiener, Philip P. (ed.), *Dictionary of the History of Ideas*. New York: Charles Scribner's Sons, Vol. 2, p. 65.
- Rabie E. Abdel-Halim, Ali S. Altwaijiri, Salah R. Elfaqih, Ahmad H. Mitwall. (2003). *Extraction of urinary bladder described by Abul-QasimKhalafAlzahrawi (Albucasis) (325-404 H, 930-1013 AD)*, *Saudi Medical Journal* 24 (12).
- Saad, Bashar, Azaizeh, Hassan, Said, Omar. (2005). *Tradition and Perspectives of Arab Herbal Medicine: A Review, Evidence-based Complementary and Alternative Medicine* 2 (4). Oxford University Press.
- Sari, Prof. Nil. (2007). *Hindiba: A Drug for Cancer Treatment in Muslim Heritage*. Istanbul University, Cerrahpasha Medical School.
- Sarton, G.. (1975). *Introduction to the History of Science*. New York: Krieger, vol. 1.
- Sayili, Aydin. (1981). *The Observatory in Islam*. New York: Arno Press.
- Scheppler, Bill. (2006). *Al-Biruni: Master Astronomer and Muslim Scholar of the Eleventh Century*. The Rosen Publishing Group.
- Shehata, Prof. Dr. Mostafa. (2003). "The Ear, Nose and Throat in Islamic Medicine" in *Journal of the International Society for the History of Islamic Medicine*.
- Siraisi, Nancy G. (1990). "Avicenna in Renaissance Italy: The Canon and Medical Teaching in Italian Universities after 1500" in *The Journal of Modern History*, 62 (1).
- Skinner, Patricia (2001). *Unani-tibbi, Encyclopedia of Alternative Medicine*. Accessed on October 22, 2014. See:
<<http://en.wikipedia.org/wiki/The_Canon_of_Medicine>>
- Zahoor, Dr. A. (1997). *Abu Raihan Muhammad al-Biruni*. Hasanuddin University.