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MEDICINES AND METHODS OF THERAPY IN THE ARAB AND ISLAMIC WORLD

Bashar Saad^{1,3}, Rola JadAllah³, Harbi Daraghmeh³, and Omar Said^{1,2}

1. Qasemi Research Center- Al-Qasemi Academic College, Baga Algharbiya, Israel,
 2. Antaki Center for Herbal Medicine, P.O.Box 2205, Kufur kana 16930, Israel; and Research and Development Regional Center - The Galilee Society, P.O.Box 437, Shefa Amr 20200, Israel
 3. Faculty of Arts and Sciences, Arab American University Jenin, P.O.Box 240, Jenin, Palestine

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ABSTRACT:

Arab and Islamic medicine is widely used in most Arab and Islamic world which form about one fifth of the world's population. The Arab and Muslim world refers in geopolitical sense to Muslim majority countries or countries in which Islam dominates politically. This community is spread across many different nations and ethnic groups connected only by religion. Medicine in general is considered to be one of the best known facets of Arab-Islamic civilization. Islamic medicine or Arab-Islamic medicine refers to medicine developed in the medieval Islamic civilization and written in Arabic, the *lingua franca* of the Islamic civilization. The development of Arab-Islamic medicine was based on, 1) Practical knowledge developed traditional healers in the pre-Islamic period based on a long history of trial and error. 2) Theoretical and practical knowledge developed in the Greek, Indian and Persian medical systems, which became available to Arab and Muslim scholars after translation of their medical scripts 3) Theoretical and practical knowledge introduced by the Islam. These include natural products mentioned in the holly Quran or in the Hadith of the Prophet Mohammad (PBUH), 4) Theoretical and practical innovations introduced by Arab and Muslim scholars. To keep within the scope of the present review, we will highlight contributions of the Islam and innovations introduced by Arab and Muslim scholars.

Key words: *Arab-Islamic medicine; Herbal medicine, Tibb al Nabawi.*

INTRODUCTION

The development of Arab and Islamic medicine was simultaneous to Prophet Mohammad's (peace be upon him) (570-632 AC) journey from the Quraysh tribe in Mecca, when at the age of 40 he began to receive the Holy Quran in verses. He was able to unite the Arab tribes who had been isolated by revenge, rivalry, internal fights, and created a strong nation, able to defeat the Persian and Byzantine Empires. By the time of his death, all of Arabia had adopted Islam and a century later his followers had conquered half of Byzantine Asia, all of Persia, Egypt, the Maghreb (North Africa), and Spain. The Muslims not only conquered new lands and preserved their cultures but also became scientific innovators through originality and productivity. In temporal terms this age (Arab and Islamic golden age) covered a period of roughly nine centuries – from the middle of the seventh to the end of

the fifteenth century, by which time the empire was divided into three distinct empires, the Safavid empire in Persia (modern Iran), the Mughal empire in India, and the Ottoman empire centered in Turkey. The Islamic Empire one of the most advanced and civilized nation in the world. This is because Islam stressed the importance and respect of learning, forbade destruction, and tolerance for other religions. Medicine flourished because it was promoted by Caliphs, while Baghdad, Seville, Toledo, Granada, and other cities were well known as main centers for Arab-Islamic medical sciences and culture. By the tenth century their zeal and enthusiasm for learning resulted in the translation of essential Persian, Indian and Greek medical writings into Arabic in Damascus, Cairo, and Baghdad. Arabic became the international language of learning and diplomacy. The center of scientific knowledge and activity shifted eastward, and Baghdad

emerged as the capital of the scientific world. Greco-Arab and Islamic medicine was a result of Roman, Greek, Persian, and Indian theories and practices, within the general context of Islam's system of ethics (Figure 1). Arabs then established and promoted their own medical sciences in theories and practices that became highly influential in Western science and teaching. Physicians, whether they were Muslims, Christians, or Jews, under the umbrella of Islam raised the dignity and caliber of the medical profession. During the Islamic golden age, the medical sciences rose in esteem from that of a menial calling to the rank of a learned profession. Arab and Islamic medicine had advanced from ephemeral talisman and theology to

tangible hospital wards, mandatory testing for doctors and the use of technical terminology. Baghdad and Cairo had hospitals open to both male and female patients; staffed by attendants of both sexes. These medical centers contained libraries, pharmacies, intern systems, externs and nurses. There were mobile clinics to reach the disabled, the disadvantaged and those in remote areas. There were regulations to maintain quality control on drugs. Pharmacists became licensed professionals and were pledged to follow the physician's prescriptions (Saad et al., 2005, 2008(a), Said et al., 2002, Albitar et al., 1974, Alturkmani et al., 1930, Sena et al., 1994).

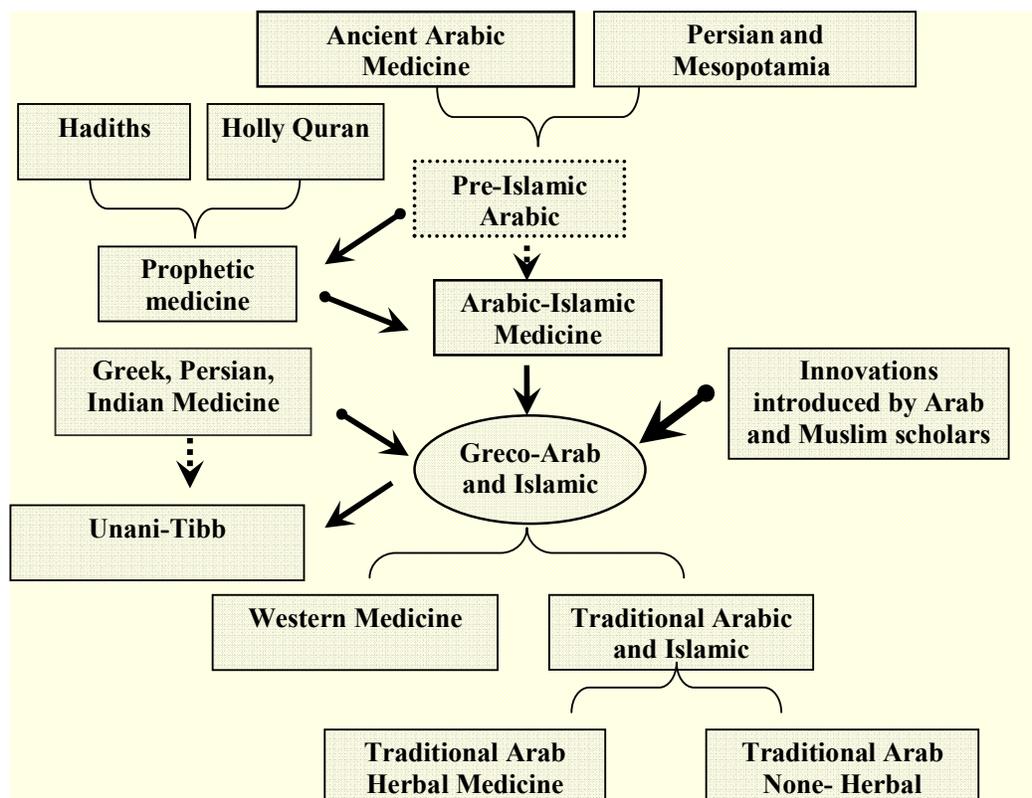


Figure 1. Development of Arab and Islamic medicine. Arab and Islamic medicine became one of the most famous and best known achievements of Arab-Islamic civilization. Arab and Islamic medicine was a result of Roman, Greek, Persian, and Indian theories and practices, within the general context of Islam's system of ethics. Arabs then established and promoted their own medical sciences in theories and practices that became highly influential in Western science and teaching. Use of the Arabic language enabled a mix of diverse peoples speaking different languages to communicate with one another.

Theoretical and practical knowledge introduced by the Islam.

In Islamic tradition, the first Arab-Muslim physician is believed to have been the Prophet Mohammad (PBUH) himself, as a significant number of Hadiths concerning medicine are attributed to him. The three methods of healing known to have been mentioned by him were honey, Hijamah (cupping), and Key (cauterization), though he was generally opposed to the use of cauterization unless it "suits the ailment." In

addition, many plants and animal products are mentioned in the holly Quran and in the Hadith of the Prophet (PBUH), e.g., dates, black seeds, olive leaf and olive oil, and camel's milks. These products were used by the Prophet as diet as well as in treatment of various diseases (Figure 2). Later on these products were utilized by the medicine of the Prophet (Al-Tibb al-Nabawi), which includes medical treatments, prescriptions, prevention, health promotion, and spiritual aspects that were recommended by Prophet

(PBUH) to his companions. As aforementioned, this medical practice adopted many medical knowledge and practices existed in pre-Islamic period (Figure 1). Two Hadiths of the Prophet (PBUH), *"The one who sent down the disease sent down the remedy."* and *"For every disease, Allah has given a cure"* encouraged Muslims to search for remedies for each diseases and greatly influenced the development of Arab-Islamic medicine during the golden age of the Arab-Islamic civilization (Saad et al., 2005, 2008(a), Said et al., 2002, Albitar et al., 1974, Alturkmani et al., 1930, Sena et al., 1994).

The book of Medicine (*kitab al-tibb*) of Sahih al-Bukhari by Imam Bukhari's (810-870 A.D) is considered by the majority of the Muslim scholars to be one of the most credible collections of what had been said and practiced (Hadith and Sunnah) by the Prophet (PBUH). The scope of the Prophetic medicine has been explained in the very well known commentaries of Sahih al-Bukhari by Ibn Hajar Al-Asqalani (d. 1449 A.D.) and Abu Muhammad Al-'Ayni (d. 1452 A.D.), both were living in the golden age of the Arab-Islamic civilization when medical literature over flows with all sorts of medical disciplines. It was probably in consequence of reading those literatures that they were in preference to hold that medicine of the Prophet, as other medical sciences, does not only refer to what had been said and practiced in the time of Prophet but it reaches and includes every field of human medical research, practices and thought at all time. Ibn Hajar divides the science of medicine into two types namely physical medicine and spiritual medicine, which are associated through a symbiotic relationship. Therefore, physicians should be fully aware of spiritual and physical medicine because, in Islam, the breath and the body, the soul and matter, the faith and the world have been accorded equal importance. The importance of the relationship between both types of medicines was highlighted by Ibn Sina who stated *"We have to understand that the best and effective remedy for the treatment of patients should be through the improvement of the power of the human body in order to increase its immune system, which is based on the beauty of the surroundings and letting him listen to the best music and allow his best friends to be with him"*. Hence, there is equilibrium in the nature of the body with the nature of heart, the body stays healthy. When equilibrium is lost, things become contra-natural and disease is produced (Syed, 2003 and Deuraseh, 2006).

The Prophetic medicine is not based on medical experiments but rather on inspiration, experience from the previous culture and tradition. Diet plays a central role in the Prophetic medicine. According to a Hadith, the stomach is the central basin of the body and origin of many diseases *"The stomach is the central basin of the body, and the veins are connected to it. When the stomach is healthy, it passes on its condition to veins, and in turn the veins will circulate the same and when the stomach is putrescence, the veins will absorb such*

putrescence and issue the same". Indeed, the prophet (PBUH) used to recommend food for ailments even more than herbs or animal-based medicines. He used everything from barley soup to honey to camel's milk to heal his followers and advised them to eat certain foods to prevent or cure other diseases. Honey, camel's milk, dates, olive oil, and black seeds were the favored foods by the Prophet (PBUH) who regarded food as part of an overall holistic approach. Concerning olive oil, he said *"Eat olive oil and massage it over your bodies since it is a holy tree"*. Black seeds were regarded as a medicine for that cures all types of diseases. He once stated, *"The black seed can heal every disease, except death"*. Dates are mentioned in 20 places in the Quran. Prophet (PBUH) is reported to have said: *"if anyone of you is fasting, let him break his fast with dates. In case he does not have them, then with water. Verily water is a purifier"*. In the following we will highlight the uses and pharmacological significance of some of diets used and recommended by the Prophet (PBUH) (Syed, 2003 and Deuraseh, 2006).

Camel's milk: Milk is rich in proteins and peptides, which play a crucial role in innate immunity when transferred to the offspring and may accelerate maturation of the immune system in newborns. The immune properties of these molecules prompted investigators to investigate their potential application in prevention and therapy for newborns and adults. Camel's milk is different from other ruminant milk; having low cholesterol, low sugar, high minerals (sodium, potassium, iron, copper, zinc and magnesium), high vitamin C, B2, A and E, low protein and high concentrations of insulin. It has no allergic properties and it can be consumed by lactase deficient persons and those with weak immune systems. The milk is considered to have medicinal properties. In Sahara, fresh butter is often used as a base for medicines. The products developed also include cosmetics or pharmaceuticals. A series of metabolic and autoimmune diseases are successfully being treated with camel's milk. In India, camel's milk is used therapeutically against dropsy, jaundice, problems of the spleen, tuberculosis, asthma, anemia, piles and diabetes. Beneficial role of raw camel's milk in chronic pulmonary tuberculosis patients has been observed. In repeated trials, it was observed that there was 30-35% reduction in daily doses of insulin in patients of type 1 diabetes receiving raw camel's milk. The Prophet (PBUH) mentioned that camel's milk and urine have medical effects, so Islam encourages and permits the drinking of camel milk and camel urine is permitted in case of necessary medical treatment. Bedouins treat many diseases and disorders with camel milk. This range from osteoporosis, rickets, hepatitis, digestive ulcers and disorders, spleen problems, tuberculosis, asthma, flu, and other respiratory diseases to controlling heartbeat, hypertension and diabetes (Saad et al., 2005, 2008(a), Said et al., 2002, Albitar et al., 1974, Alturkmani et al., 1930, Sena et al., 1994).

Honey: In Arab-Islamic medical system, as in other medical systems, including Ayurvedic, Chinese, and Roman traditions, honey is considered as healthy drink. The holy Qur'an describes its potential therapeutic value. *"And thy Lord has inspired the Bees, to build their hives in hills, on trees and in man's habitations, from within their bodies comes a drink of varying colours, wherein is healing for mankind, Verily in this is a Sign, for those who give thought"*. Imam Bukhari entitled chapter four of his Kitab al-Tibb (book of medicine) as *"al-Dawa'bi al-Asal wa Qawlihi Ta'ala 'Fihi Shifa li al-Nas* (treatment with honey and the statement of Allah: where is healing for men)." At this place, Imam al-Bukhari mentioned three ahadith on honey together with its value which is emphasized in many verses of the Quran. Al Razi (Rhazes, 864-932 A.D), claimed that a mixture made of flour and honey vinegar was good for skin disease and sports nerve injuries and recommended the use of honey water for bladder wounds. His book, *Al Hawi* (Encyclopedia of Medicine) he stated: *"Honey is the best treatment for the gums. To keep the teeth healthy mix honey with vinegar and use as mouth wash daily. If you rub the teeth with such a preparation, it will whiten the teeth. Honey does not spoil and could also be used to preserve cadavers"*. Ibn Sina (Avicenna, 980-1037A.D) recommended to use honey as part of an overall holistic approach to health and should be incorporated into one's everyday diet. He stated in his Canon: *"Honey is good for prolonging life, preserve activity in old age. If you want to keep your youth, take honey. If you are above the age of 45, eat honey regularly, especially mixed with chestnut powder. Honey and flour could be used as dressing for wounds. For lung disease, early stage of tuberculosis, use a combination of honey and shredded rose petal. Honey can be used for insomnia on occasions"*. (Sena et al., 1994, Syed, 2003, Deuraseh, 2006, Bogdanov et al., 2008, Al-Quassem and Robinson, 2003, Irish et al., 2006, Al-Waili and Boni ,2003).

Olive oil: Olive oil and olive leaf are cited in the Bible as a natural healer: *"The fruit thereof shall be for meat and the leaf thereof for medicine"*. In Islam, olive oil is mentioned in the Quranic verse:

"God is the light of heavens (paradise) and earth. An example of His light is like a lantern inside which there is a torch, the torch is in a glass bulb, the glass bulb is like a bright planet lit by a blessed olive tree, neither Eastern nor Western, its oil almost glow, even without fire touching it, light upon light" . The Qur'an also mentions (tells) olives as a sacred plant: *"By the fig and the olive, and the Mount of Sinai, and this secure city."* Prophet Muhammad (PBUH) said, *"Eat olive oil and massage it over your bodies since it is a holy (mubarak) tree"*. He also stated that olive oil cures 70 diseases. In the Arab-Islamic world, olive oil has been commonly used in cooking, cosmetics, pharmaceuticals, and soaps and as a fuel for traditional oil lamps.

Olive oil, the main source of fat in the Mediterranean diet, has been associated with a low cardiovascular and cancer mortality. The beneficial effects of olive oil on coronary heart disease (CHD) risk factors are now recognized attributed to the high MUFA content and other minor compounds found in the olive oil. Evidences from epidemiological studies suggest that a higher proportion of MUFA in the diet is linked with a reduction in the risk of coronary heart disease. There is a large body of clinical data that show that consumption of olive oil can provide heart health benefits such as favourable effects on cholesterol regulation and LDL oxidation. It exerts also anti-inflammatory, antithrombotic, antihypertensive as well as vasodilatory effects both in animals and in humans. Olive oil, however, besides having a high MUFA level, the oleic acid, contains multiple pharmacology active components. Olive oil phenolics have shown to have antioxidant properties, higher than that of vitamin E, on lipids and DNA oxidation. They prevent endothelial dysfunction by decreasing the expression of cell adhesion molecules, and increasing nitric oxide (NO) production and inducible NO synthesis by quenching vascular endothelium intracellular free radicals. In addition, olive oil phenolic compounds inhibited platelet-induced aggregation and have been reported to enhance the expression the gene of the antioxidant enzyme glutathione peroxidase. Other potential properties include anti-inflammatory and chemopreventive activity. In animal models, olive oil-derived phenolics retained their antioxidant properties *in vivo* and delayed the progression of the atherosclerosis. So far, most of the cardioprotective effect of olive oil in the context of the Mediterranean diet has been attributed to its high MUFA content. It must be noticed, however, that oleic acid is one of the predominant fatty acids in widely-consumed animal foods in Western diets, such as poultry and pork. A direct association of meat intake with the plasma oleic acid concentration was observed in a Swedish female population. In this population, oleic acid plasma concentrations were higher than those of females of Granada in Spain, without differences in polyunsaturated (PUFA) levels. Thus, perhaps a high oleic acid intake is not the sole primary responsible agent for the healthy properties of olive oil. In spite of the promising role for health displayed in experimental studies, evidence of the benefits of olive oil phenolic compounds consumption in humans is still on the debate. If the beneficial properties of olive oil in humans can be attributed solely to its MUFA content, any type of olive oil, rapeseed/canola oil, or MUFA-enriched fat would provide the same health benefits. Thus, public health implications are involved in order to specifically recommend olive oil, and which type of olive oil, (*i.e.*, virgin olive oil rich in phenolic compounds) as individualized nutritional strategies for CHD prevention (Saad et al., 2005, 2008(a), Sena et al., 1994, Covas , 2008, Goulas et al., 2009).

Dates: Dates are an important traditional crop in Iraq, eastern region of the Mediterranean, and Maghreb countries and are mentioned in 20 places in the Quran. Prophet Mohammad (PBUH) is reported to have said: "if anyone of you is fasting, let him break his fast with dates. In case he does not have them, then with water. Verily water is a purifier". Therefore, in Islamic countries, dates and yogurt or milk is a first meal when the sun sets during Ramadan. Dry or soft dates are eaten out-of-hand, or may be pitted and stuffed with fillings such as almonds, walnuts, or marzipan. Dates were favored food of the Prophet who said, "Whoever takes seven dates in the morning will not be effected by magic or poison on that day." Dates contain high amounts of dietary fibers, which are important for the health of the digestive tract. Dietary fibers consist of the edible plant material, which is not hydrolyzed by the human digestive tract. Many studies recommend the public to consume adequate amounts of dietary fiber from a variety of plant foods. Dates also contain useful quantities of antioxidants. Antioxidants are thought to play an essential role in the prevention of cardiovascular disease, cancers, and neurodegenerative diseases, such as Parkinson's and Alzheimer's diseases, as well as inflammation and continuous ageing. A dietary antioxidant is defined as a substance in foods that significantly decreases the adverse effects of reactive species, such as reactive oxygen and nitrogen, on normal physiological function in humans. Antioxidants markedly delay or prevent oxidation of the substrate when they are present in foods or in the body at low concentrations. Natural antioxidants consist primarily of plant phenolics, vitamin C, carotenoids, and selenium. Examples of common plant phenolic antioxidants include flavonoid compounds (anthocyanins), cinnamic acid derivatives, coumarins, and tocopherols (vitamin E). The average contents of phenolics ranged from 193.7 mg/100 g for fresh dates to 239.5 mg/100 g for dried dates (Saad et al., 2005, 2008(a), Al-Shahib and Marshall, 2003, Al-Farsi and Lee, 2008, Al-Rawahy, 2007, Almana and Mahmoud, 1994 and Vayalil, 2002).

Black seed (*Nigella sativa*): Black seed is one of the most commonly used medicinal plants throughout the Middle East. Black seeds are known to have many medicinal properties and are widely used in Arab and Islamic medicine. Black seeds have been used for centuries as a spice and food preservative, as well as a protective and curative remedy for numerous diseases. The seeds are the main source of the active compounds of the plant. Black seeds were used by ancient Egyptian and Greek physician to treat nasal congestion, toothache, as a diuretic to promote menstruation, and increase milk production. The seeds, known as black seed, black cumin or "Habbatul-Barakah" in Arabic, have long been prescribed in Greco-Arab and Islamic medicine as well as in Indian and Chinese traditional medicine for prevention and treatment of a wide range of diseases, including bronchial asthma, headache, dysentery, infections,

obesity, back pain, hypertension and gastrointestinal problems. It is the black seed referred to by the prophet Mohammad (PBUH), who once stated, "The black seed can heal every disease, except death". Avicenna (980-1037 AC) refers to black seed in his *Canon of Medicine*, as the seed that stimulates the body's energy and helps recovery from fatigue and dispiritedness. In the Unani Tibb system of medicine, seeds are regarded as a valuable remedy for a number of diseases. The seed's oil has been used to treat skin conditions such as eczema and boils and to treat cold symptoms. In conclusion, its many uses have earned black seed the Arabic name 'Habbatul barakah', meaning the *seed of blessing*. The aforementioned statement by the Prophet Mohammad describing black seed, as "having a remedy for all illnesses" may not be so exaggerated as it at first appears. Recent research has provided evidence, which indicates that black seed contains an ability to significantly boost the human immune system - if taken over time. The prophetic phrase, "hold onto the use of the seed," also emphasizes consistent usage of the seed. Therefore, one important is that black seed should be regarded as part of an overall holistic approach to health and should be incorporated into one's everyday diet. In this way, nutritional values and therapeutic properties contained in the black seed can help in maintaining a healthy condition and supplying the immune system with the optimum resources it needs to help prevent and treat diseases. Therefore, in cognizance of black seed's substantial nutritional components, as well as its specific medicinal properties, the body's ability to maintain health and promote healing of a lasting nature is best increased through regular use of black seed.

The black seed is traditionally used in eastern Mediterranean as an enhancer of milk production during breastfeeding. Black seed is an excellent form of added nutrition for both mother (black seeds mixed with toasted flour, toasted sesame, and honey and prepared as cakes) and the growing child while its immune system boosting properties serve as a natural, safe way to build resistance against illness. In addition, as studies have shown, black seed helps increase milk production during breastfeeding. Therapeutic potential and toxicological properties of the seeds have been extensively studied. A Medline and Google Scholar search using "*Nigella sativa*" and "medicine" reveals more than 1600 citations, including anti-oxidant, anti-inflammatory, anti-microbial, hypotensive, anti-nociceptive, choleric, uricosuric, choleric, anti-diabetic, and anti-histaminic, immunomodulatory, anticancer, and anti-fertility effects (Saad et al., 2005, 2008(a), and Salem, 2005).

Pomegranate: The fruit, commonly known as Rumman in the Arab world, can be divided into three structural compartments: seed, juice, peel. Pomegranate molasses (known as dibs rumman in Arabic) is an essential Middle Eastern ingredient. The pomegranate has long been used in traditional Arab-Islamic medicine to treat a variety of ailments, including

sort throat, inflammation and rheumatism. These uses of the pomegranate are common throughout the Middle East, Iran, and India, where the fruit is common. Additional traditional uses include treatment of diarrhea and colic and to remove intestinal worms in children. The fruit is also used for treating bladder disturbances, strengthening gums and soothing mouth ulcers. In India, the leaf of the pomegranate is used to treat cuts, as it contains a natural healing and soothing agent. Pomegranates feature prominently in all religions, Judaism, Christianity, Islam, Buddhism and Zoroastrianism. According to the Qur'an, pomegranates grow in the gardens of paradise. Pomegranates, along with dates and olives, are also mentioned in the following verse from the Holy Qur'an, which speaks of the dues that have to be paid upon each harvest, as well as the evil of wastefulness. *"And it is He Who produces gardens trellised and untrellised, and date-palms, and crops of different shape and taste and olives, and pomegranates, similar (in kind) and different (in taste). Eat of their fruits when they ripen, but pay the due thereof on the day of its harvest, And waste not by extravagance. Verily, He likes not those who waste by extravagance"*. The most abundant polyphenols in pomegranate juice are the hydrolyzable tannins called punicalagins, which are powerful antioxidants. Punicalagins are absorbed into the human body and may have dietary value as antioxidants; other phytochemicals include beta-carotene, and polyphenols catechins, gallic catechins, and anthocyanins such as prodelphinidins, delphinidin, cyanidin, and pelargonidin. The fruit contains also Vitamin C at 0.47 mg/100 g. The pharmacological uses of the pomegranate, as was seen with the two other plants of the Qur'an, dates and olives, are numerous. These include anti-oxidant, hormone replacement therapy, resolution of allergic symptoms, cardiovascular protection, oral hygiene, ophthalmic

ointment, weight loss soap, and as an adjunct therapy to increase bioavailability of radioactive dyes during diagnostic imaging. Pomegranate mediated antioxidant activity can be considered a means of lowering the threshold for inflammation. Antioxidant activity, as well as suppression of inflammation, may contribute to chemotherapeutic and chemopreventive utility against cancer (Saad *et al.*, 2005, 2008(a), Lansky and Newman, 2007).

Innovations introduced by Arab and Muslim scholars.

Arab and Muslim scholars established and promoted their own medical sciences in theories and practices that became highly influential in Western science and teaching. Like in other fields of science, Arab-Muslim physicians developed the first scientific methods for the field of medicine. This included the introduction of experimentation, quantification, experimental medicine, evidence-based medicine, clinical trials, dissection, animal testing, human experimentation and postmortem autopsy by Muslim physicians, whilst hospitals in the Arab-Islamic world featured the first drug tests, drug purity regulations, and competency tests for doctors.

Arab-Muslim scholars were not guided by a long history of trial and error, but mainly by scientific methods, which has led to production of evidence based medication. Avicenna (Ibn Sina) (Figure 2) discussed in his second book (on simple drugs or *materia medica*) the nature and quality of drugs, and the way that mixing them influences their effectiveness. He stated *"You can tell the potency of drugs in two ways, by analogy (qiyas) and by experiment (tajribah). We say experimenting leads to knowledge of the potency of a medicine with certainty after taking into consideration certain conditions."*

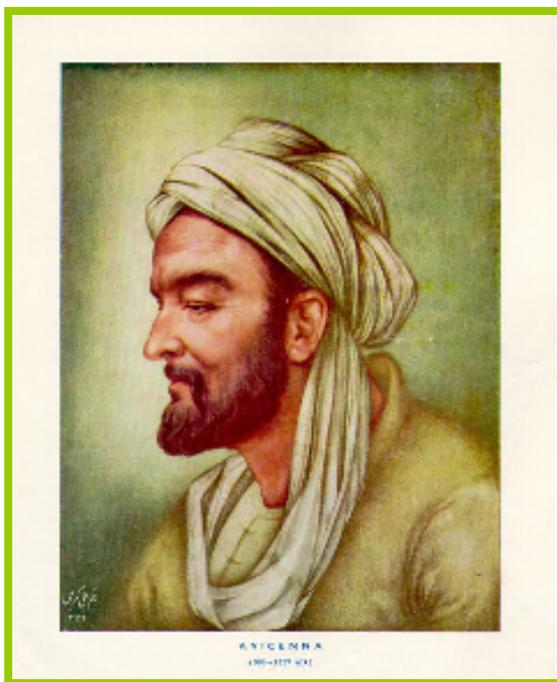


Figure 2. Abu Ali al-Husayn ibn Abd Allah ibn Sina (980-1037), known as Avicenna, began his studies in Bukhara under the guidance of several well-known scholars of the time. He studied logic, philosophy, metaphysics, and natural sciences, and gradually developed an interest in medicine. Ibn Sina is remembered in Western medical history as a major historical figure who made fundamental contributions to medicine and the European reawakening. About 100 treatises were ascribed to Avicenna. The best-known amongst them is his 14-volume *The Canon of Medicine*, which was a standard medical text in Western Europe for seven centuries.

Responding to circumstances of time and place, Arab-Islamic physicians and scholars developed a large and complex medical literature exploring and synthesizing the theory and practice of medicine. They introduced many new ideas and upgraded the knowledge about herbs and their potential medical efficacy and safety. The first encyclopedia of medicine in Arabic was *Firdous al-Hikmah* ("Paradise of Wisdom") by Ali ibn Sahl Rabban al-Tabari written in seven parts around 860 A.D. It was the first to deal with pediatrics and child development, as well as psychology and psychotherapy. Al-Tabari emphasized strong ties between psychology and medicine, and the need of psychotherapy and counseling in the therapeutic treatment of patients. Al Razi (Rhazes) wrote the *Comprehensive Book of Medicine* in the 9th century. The *Large Comprehensive* was the most sought after of all his compositions, in which Rhazes recorded clinical cases of his own experience and provided very useful recordings of various diseases. The *Comprehensive Book of Medicine*, with its introduction of measles and smallpox, was very influential in Europe. Abu al-Qasim al-Zahrawi (Abulcasis), regarded as the father of modern surgery, contributed greatly to the discipline of medical surgery with his *Kitab al-Tasrif* ("Book of Concessions"), a 30-volume medical encyclopedia published in 1000 A.D., which was later translated to Latin and used in European medical schools for centuries. He invented numerous

surgical instruments and described them in his *al-Tasrif*. Ibn Sina (Avicenna, (980-1037)) was another influential figure. He is regarded as the father of modern medicine. His medical encyclopedia, *The Canon of Medicine* (c. 1020 A.D), remained a standard textbook in Europe for centuries. Among other things, Avicenna's contributions to medicine include the introduction of systematic experimentation and quantification into the study of physiology, the 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, risk factor analysis, and the idea of a syndrome in the diagnosis of specific diseases, the contagious nature of phthisis and tuberculosis, the distribution of diseases by water and soil, and the first careful descriptions of skin troubles, sexually transmitted diseases, perversions, and nervous ailments, as well the use of ice to treat fevers, and the separation of medicine from pharmacology, which was important to the development of the pharmaceutical sciences. Herbal medicine was a central part of Islamic civilization. Numerous encyclopedias on botany were written, with highly accurate precision and details of medicinal plants. For instance, Al-Dinawari (828-896) is considered as the founder of Arabic botany for his *Book of Plants*, in which he described about 640 plants

and described the phases of plant growth and the production of flowers and fruit. Ibn Abil-Bayan in 1161 A.D in Spain published *The Bimaristan Law in Pharmacopoeia, Materitenses*. This book contains 607 detailed medications. Ibn Zuhr (Avenzoar) who lived in Seville, Spain (1091-1161 A.D) wrote the *Al Kitab Al Jami*, about liquids and creams. This book includes 230 medications that are mostly herbal and a few are of animal and mineral origin. This book gives a full description of the uses of herbs whether they are roots, seeds, or leaves. In the early 13th century, the Andalusian-Arabian biologist Abu al-Abbas al-Nabati published several books and dictionaries on the use of medicinal plants describing each plant species, the plant parts used, the preparation procedure used for each remedy, and the treatment procedure of certain diseases. Ibn al Baitar who lived in Damascus, Syria (1197-1248 AD) published *The Book on Drinks and Foods*, which is a collection of different drinks and foods. It is the most prestigious book in the Arabian pharmacopeia; it contains 260 references. The medications were classified in alphabetical order. Daoud Al-Antaki used different herbs for treating patients and published a book on medicinal herbs summarizing the knowledge of his predecessors (Saad et al., 2005, 2008(a), Said et al., 2002 , Albitar et al., 1974, Alturkmani et al., 1930, Sena et al., 1994, Syed, 2003 and Deuraseh, 2006).

Method of Therapy used in the Arab and Islamic Medicine

In Islam, the breath and the body, the soul and matter, the faith and the world have been accorded equal importance. Similarly, many Arab and Muslim physicians proposed that the body must be treated as a whole and not just a series of parts, and that it was endowed with an ability of natural healing, which depended on rest, a good diet, fresh air and cleanliness. They noted that there were individual differences in the severity of disease symptoms, and in the individuals' ability to cope with their disease and to heal. Hippocrates thus laid the foundations of the modern theory that thoughts, ideas and feelings, which he proposed to originate in the brain, can influence

health and the process of disease. Rhazes supported this concept by the his recommendation: "*The physician, even though he has his doubts, must always make the patient believe that he will recover, for state of the body is linked to the state of the mind*". Later on, Avicenna who defined medicine as "*Medicine is the science from which we learn the states of the human body with respect to what is healthy and what is not; in order to preserve good health when it exists and restore it when it is lacking*" supported the views of Rhazes. He stated that: "*We have to understand that the best and effective remedy for the treatment of patients should be through the improvement of the power of the human body in order to increase its immune system, which is based on the beauty of the surroundings and letting him listen to the best music and allow his best friends to be with him*".

It is now clear that the mind and the body interact, influence and regulate each other. The perception of stress can lead to production of 'stress hormones', as well as products of the immune system. These 'stress hormones' act in a feedback mechanism to regulate their own production and the production of certain immune products. These immune products act on the brain to modify behavior and ability to perceive and to respond to stressful challenges by inducing lethargy, fever and nausea (i.e. 'sickness behavior').

Based on recommendations of Rhazes and Avicenna, the Arab and Islamic medicine treats patients through a scheme starting with physiotherapy and diet; if this failed, drugs were used. Rhazes's treatment scheme started with diet therapy, he noted that "*If the physician is able to treat with foodstuffs, not medication, then he has succeeded. If, however, he must use medications, then it should be simple remedies and not compound ones*". Drugs were divided into two groups: simple and compound drugs. Physicians were aware of the interaction between drugs; thus, they used simple drugs first. If these failed, compound drugs, consisting of two or more compounds were used. If these conservative measures failed, surgery was undertaken (Figure 3) (Saad et al., 2005, 2008(a), Said et al., 2002 , Albitar et al., 1974, Alturkmani et al., 1930, Sena et al., 1994, Syed, 2003 and Deuraseh, 2006).

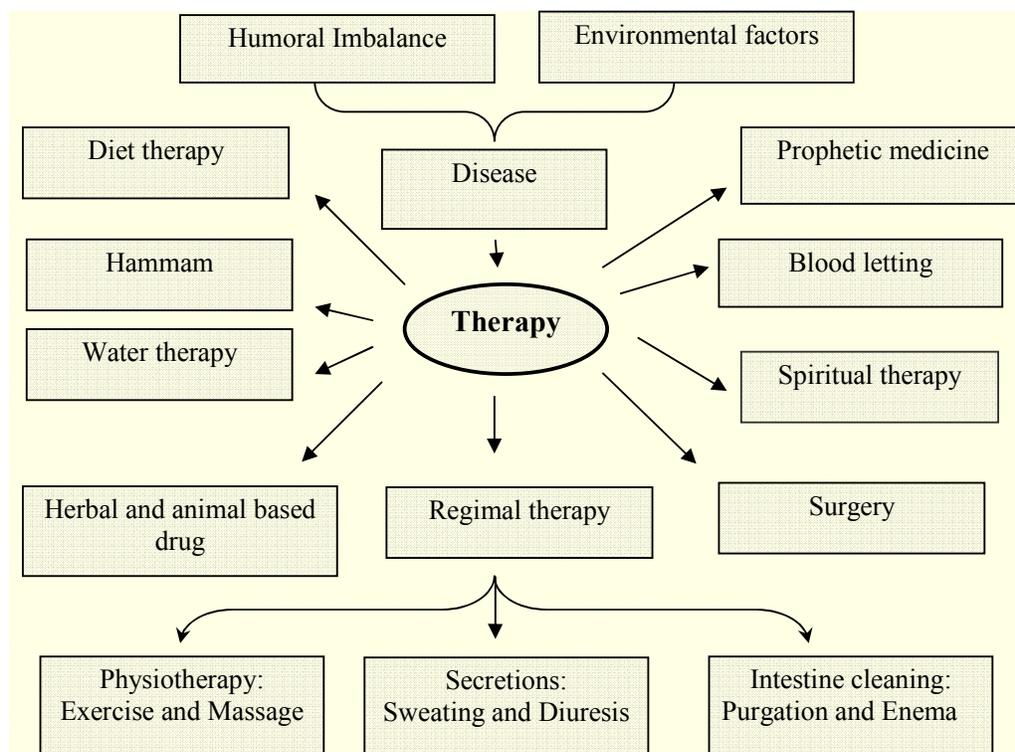


Figure 3. Methods of therapy used in the Arab and Islamic medicine. The Greek and Roman humor theory or humoralism of the human body had a great influence on the development of the Greco-Arab medical system. Essentially, this theory held that the human body contains four basic fluids, called humors, which are in balance in healthy persons. Imbalances, e.g., an excess or deficit in one of four humors results in the development of a disease state. The humoral theory was adopted and further developed by Arab-Muslim physicians and became the most commonly held view of the human body among European physicians until the advent of modern medical research in the nineteenth century.

Concluding remarks

Despite great progress in allopathic medicine, Arab-Islamic medicine has continued to be practiced within the Arab-Islamic world (Saad *et al.*, 2005, 2006 2008(a),2008(b), Said *et al.*, 2002, 2009). Cultural beliefs and practices often lead to self-care or home remedies in rural areas and consultation with traditional healers. Arab-Islamic therapies have been utilized by people who have faith in spiritual healers and herbalists. These people are the first choice for problems such as infertility, impotence, diabetes, obesity, epilepsy, psychosomatic troubles, and many other diseases. The modern use of Arab-Islamic herbal medicines has historical roots in Greco-Arab and Islamic medicine, which was developed in the golden age (seventh to fifteenth century) of the Islamic civilization and written in Arabic, the lingua franca of the Islamic civilization. This medical tradition has influenced the fates and fortunes of countless human beings. In addition to being fascinating in its own right, Arab-Islamic medicine is also important because of its influence on Europe where it formed the roots from which modern Western medicine arose. To be sure, the earlier Greco-Roman scholarly medical literature was the stem from which much Arab-Islamic medicine

grew, just as, several centuries later, Arab-Islamic medicine was to be the core of late middle ages and early European medical education. As discussed above, however, Arab-Islamic medicine was not simply a continuation for Greek ideas but it was a venue for innovation and change. Medical innovations introduced by Arab and Muslim physicians included: discovery of the immune system, introduction of microbiological science, and the separation of pharmacological science from medicine. Owing to a statement (Hadith) by the Prophet Mohammad (PBUH), "The one who sent down the disease sent down the remedy." and "For every disease, God has given a cure." every Muslim is encouraged to search for those remedies and use them with skill and compassion.

REFERENCES:

- Al-Farsi MA., and Lee, CY., (2008) *Nutritional and Functional Properties of Dates: A Review*, Critical Reviews in Food Science and Nutrition,48:877-887
- Almana, HA., and Mahmoud, R.M. (1994). Palm date seeds as an alternative source of dietary fibre in Saudi bread. *Ecol. Food Nutr.* 32:261-270.
- Al-Quassemi R., Robinson RK., (2003) *Some special nutritional properties of honey - a brief review*. *Nutr Food Sci* 33:254-260.

- Al-Rawahy F. (2007). *Compositional and functional characteristics of dates, syrups, and their by-products*. Food Chem. 104:943–947.
- Al-Shahib W., and Marshall R.J., (2003) *The fruit of the date palm: its possible use as the best food for the future?* Int. Journal of Food Sciences and Nutrition, 54, Number 4:247-259
- Al-Waili NS., Boni NS., (2003) *Natural honey lowers plasma prostaglandin concentrations in normal individuals*. J Med Food 6:129-133.
- Bogdanov S., Jurendic T., Sieber R., Gallmann P., (2008) *Honey for Nutrition and Health: A Review*, J. American College of Nutrition, 27:677-689
- Covas MI., (2008) *Bioactive effects of olive oil phenolic compounds in humans: Reduction of Heart Disease Factors and Oxidative damage* Inflammopharmacology 16:1–3
- Deuraseh N., (2006) *Health and medicine in the Islamic tradition based on The Book Of Medicine (Kitab Al-Tibb) of Sahih Al-Bukhari*, JISHIM, 5:2-14
- Goulas V., Exarchou V., Troganis AN., Psomiadou E., Fotsis T., Briasoulis E., and Gerothanassis IP., (2009) *Phytochemicals in olive-leaf extracts and their antiproliferative activity against cancer and endothelial cells* Mol. Nutr. Food Res. 2009, 53, DOI 10.1002/mnfr.200800204
- Ibn Albitar, (1974) *Aljamea Limufradat Aladwiya Walaghdiya*. Dar Bulaaq, Cairo (manuscript from 12th. Century).
- Ibn Rassool Alturkmani, *Almuatammad Fi Aladwiya Almufrada*(1930). Dar Al Kutub Alarabaya Alkubra. Cairo. (Manuscript from 13th Century).
- Ibn Sena (Avicenna), *Al Qanun Fi al Teb*. (1994) Book six, p 77-78 (Arabic), Dar Alfiker, Bairut, Lebanon.
- Irish J., Carter DA., Shokohi T, Blair SE., (2006) *Honey has an antifungal effect against Candida species*. Med Mycol 44:289–91.
- Lansky, EP., Newman, RA., (2007) *Punica granatum (pomegranate) and its potential for prevention and treatment of inflammation and cancer*. Journal of Ethnopharmacology; 109:(2):177-206
- Saad B., Azaizeh H, Abu Hijleh, G., and Said O., (2006) *Safety of Traditional Arab herbal medicine*. eCAM 3:433-439.
- Saad, B., Azaizeh, H., and Said, O. (2005) *Tradition and perspectives of Arab herbal medicine: A Review*. Evid Based Complement Alternat Med; 2:475-479.
- Saad, B., Azaizeh, H., and Said, O. (2008(a)) *Arab botanical medicines*. The Encyclopedia of Botanicals in Clinical Practice edited by Profs. Ron Watson and Victor Preedy.
- Saad, B., Soudah AbouAtta B., Basha, W., Kmeel, AS., Khasib, S., Hmade, A., and Said O. (2008(b)) *Herbal-derived factors down regulate the production levels of nitric oxide and pro-inflammatory cytokine TNF α in LPS-Activated THP-1 cells*. eCAM 2008; doi:10.1093/ecam/nen056
- Said, O, Saad B., Fulder, S., Amin, R., Kassis E., and Khalil K., (2009) *Hypolipidemic activity of extracts from Eriobotrya japonica and Olea europaea, traditionally used in the Greco-Arab medicine in maintaining healthy fat levels in the blood*. The Open Complementary Medicine Journal, 1, 00-00 1
- Said, O., Khalil, K., Fulder, S., and Azaizeh H. (2002) *Ethnobotanical survey of medicinal herbs of the Middle Eastern region*. Ethnopharm; 83:251-265.
- Salem, ML., (2005) *Immunomodulatory and therapeutic properties of the Nigella sativa L. seed*. International Immunopharmacology; 5:1749–1770.
- Syed I.B., (2003) *Spiritual medicine in the history of Islamic medicine*, JISHIM, 2:45-50
- Vayalil, PK. (2002). *Antioxidant and antimutagenic properties of aqueous extract of date fruit (Phoenix dactylifera L. Arecaceae)*. J. Agric. Food Chem. 50:610–617.