

Review

A revival of primary healing hypotheses: a comparison of traditional healing approaches of Arabs and American Indians

Asma El-Magboub, Cecilia Garcia, James David Adams Jr.*

Department of Pharmacology and Pharmaceutical Sciences, School of Pharmacy, University of Southern California, USA

ABSTRACT

When medicine is unable to cure, and the end becomes imminent, or when the patient is tired of the side effects associated with chronic use of drugs, the search for alternative and new ways of healing is begun. Coincidentally, sometimes the alternative is the origin, as is the case for traditional Arab medicine and traditional American Indian healing. Traditional healing is the first healing that all people have used for 200,000 years, since the beginning of Homo sapiens. The sources and elements of traditional Arab medicine have been examined in books and by consulting with traditional Arab healers. Arabic medicine is a career combining both elements of science and philosophy based on religion and traditions, and includes a diversity of healing approaches: spiritual, physical, and using natural products. These approaches are discussed with emphasis on wet cupping (Alhijamah), a practice that is undergoing a revival nowadays in Arab countries. American Indian healing is a career based on religion, tradition, an innate healing gift and extensive training, both in a medical school setting and as an apprentice. Arabic healing approaches are compared to American Indian healing approaches.

Keywords Arab medicine, California Indian medicine, cupping, massage, plant medicines

INTRODUCTION

In Arab countries, incorporation of traditional medicine along with Western medicine varies greatly among individuals depending on educational and cultural backgrounds. In some cases, terminally ill patients such as cancer patients, turn to alternative medicine only after they find that Western medicine is no longer effective. On the other hand, patients with chronic diseases (hypertension, diabetes, asthma, multiple sclerosis) tend to rely on a combination of both Western and non-Western approaches to treatment with varying emphasis on each. Moreover, most acute cases seek remedies only via Western medicine, while a minority will add some spirituality to the treatment according to their beliefs.

The use of Western medicine was only introduced into the Arab world within the past century. In more recent years, however, there has become a renewed interest, with much enthusiasm, to revive the old medicinal approaches. Of these old approaches, people practice various local, Islamic or even Asian medicines, with local medicine varying greatly even between neighbouring localities.

The work presented here is supported by old Arabic medical texts and recently published books on the uses of plants in traditional Libyan medicine. Traditional Arab medical practitioners in the field were also consulted. The first author is an expert on Libyan medicine.

American Indian, specifically Chumash, healing has been supplanted by Western medicine since at least October, 1855 after Fort Tejon was built specifically to suppress traditional Chumash people and to shut down the Chumash medical

school as will be discussed later. Most Chumash healers escaped into Mexico and other places to preserve the healing tradition. Some of these healers have begun to return to California, since World War 1. They have returned to reestablish Chumash healing.

Some plants are found on most continents including: *Achillea millefolium* (yarrow), *Artemisia vulgaris* in Europe (mugwort, equivalent to: *A. douglasiana* in the USA or *A. alpina* in China), *Matricaria matricarioides* in the USA (chamomile, equivalent to: *Chamomilla suaveolens* in Europe), and *Urtica dioica* (nettles). It is possible that these plants derive from the time when all continents were fused together and have not changed over millions of years. It is also possible that these plants have been transported by people wherever people needed them. All of these plants have medicinal qualities and are used as medicines wherever they are found.

Sources

1. Religion

In Arab countries, the main religion is Islam, practiced by the vast majority of the population, with the exception of a minority that may follow other monotheistic faiths, mainly Christianity and Judaism. Authentic Islamic texts, mention several plant remedies. For instance, the use of dates (*Phoenix dactylifera*) has been explicitly instructed to aid in labor and thus is widely used among Arab women. This fruit is recommended in the Quran, the main part of Muslim scripture (The Meaning of the Quran- Mariam: 25). On the other hand, many other remedies exist that have not been explicitly described. This has led to various interpretations by physicians depending on the extent of their knowledge.

Of the most significant contribution to this field is the book entitled "Al-Teb Al-Nabawi" which was authored around the fourteenth century A.D by Al-Jawziyya. This book has been called Medicine of the Prophet and is considered a religious

*Correspondence: James David Adams Jr.

E-mail: jadams@pharmacy.usc.edu

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medical reference which has been extensively relied on for practice and research in the Arab world. This book is a refined collection of medical advice attributed to the Prophet Muhammad as part of holy Islamic scripture called "tradition" or "hadith". This book contains many important guidelines, which may seem simple and self-evident today but are in fact the result of a fusion of medical knowledge that was taken from either an Islamic legacy or common knowledge at that time. This book is the starting point for many practicing and investigating alternative medicine or what many believe is actually original medicine. Below are the guidelines described from this book.

Islamic scholars categorize diseases as of the heart or of the body. Diseases of the heart are those that are related to the mind and soul and are classified as doubt and suspicion diseases and lust diseases. These diseases of the heart are traditionally cured via spiritual treatment. In Islam this treatment is rendered by strengthening of faith in Allah and fixing one's thoughts about this life and the life-after. Fixing one's thoughts about life yields to improving one's conduct and driving off all suspicious thoughts that corrupt his/her confidence in his/her good conduct.

There are three main rules to treat and prevent diseases of the body. The first two are maintaining one's health and strength and avoiding harm. The third one being getting rid of bodily waste materials and all else which when suppressed leads to harmful effects. Suppression of the following causes illness: excessive blood quantity, semen, urine, stool, gas, vomit, sneeze, sleep, hunger and thirst.

Treatment of bodily disease is either instinctual such as quenching thirst, or requires medical expertise. As for the latter, Islamic scholars adopted the ancient medical philosophy that stated that the body is a mixture of hot, cold, wet and dry as the basis for new Islamic treatments. Health of the body exists in one of three states, normal, abnormal, and intermediate. For health to move between normal and abnormal states it must pass through the intermediate state. The normal state is when the body mixture is balanced, which is health. When the mixture of the body deviates from the balanced state in a harmful way, the body becomes ill. Illness is of eight types, four simple and four complex as follows: cold, hot, wet, dry, cold wet, cold dry, hot wet, and hot dry. When the body mixture deviates from the normal state, it does so either by increasing, decreasing, association or dissociation in shape or function.

A treating physician needs to counter the cause of an illness with its opposite. If the underlying cause of the illness is known, then attention must be paid first to the cause, then to the illness and finally to the treatment options. In cases where treatment with diet is possible, one must start there before considering medicating. Simple medications should always take precedence over complex ones. Physicians should be careful not to be too eager to prescribe medication, since a medication that is poorly matched to the illness is harmful to health. In general, diet consisting of simple non complex food, which describes the diets of Bedouin people for instance, requires similar non complex medicines. On the other hand, city dwellers whose diets tend to be complex, require similarly nonsingular medicines.

In Arab countries, people have a deep belief as a fundamental part of Islamic faith that Allah has created all illnesses, and for all illnesses He has created a cure, with the exception of aging for which there is no cure. They also believe that knowledge of these cures may still be undiscovered. For example, they strongly believe that currently incurable diseases such as HIV AIDS and cancer do indeed have cures although science has yet to uncover them. This strongly held belief

encourages physicians and patients alike to strive for finding cures. These cures should be qualitatively and quantitatively compatible with the disease. Otherwise, the cure is either inadequate or harmful in itself.

A widely accepted rule follows from the belief that a "Man does not overfill a container to worse effect than his stomach. Let suffice the sons of Adam a few mouthfuls to sustain them." Should temptation be too strong for a person, "let him make one-third for food, one-third for drink and one third for his breathing," (Sunan al-Tirmidhi 2380). Man is created from clay and his body is constituted from dirt, water and air. Continually over filling the stomach is harmful to the heart and body. Most diseases are caused by a harmful increase of a substance in the body that interferes with its normal functions. This applies to the introduction of food to the body before completing digestion of previous meals, the consumption in excess of what the body needs, consumption of food of little nutritional value that is slow to digest, or excessive consumption of various complex foods. Such actions are the root of many chronic and acute illnesses. The best benefit is derived from food when the diet is balanced in quality and quantity, rather than excessive eating.

2. Heritage and traditions

This includes what the Arabs were passed down from their ancestors, the legacy that was transmitted across time, generation after generation, and reached the current era. Before talking about the current folk medicine that is practiced in Arab countries, the ancestral medicine craft among the Arabs in past ages is discussed.

It is known that medicine in Arab countries flourished with the prosperity of the Arab Islamic civilization in the Arab world, from the seventh century to the seventeenth century A.D., which is known as the golden age of Islam. During this period, Muslim princes, scientists, philosophers, artists, poets and laborers together formed a unique culture which directly and indirectly affected communities on all continents (Turner, 1997). However, many important participants in Islamic civilization were not only Muslims, several Christian and Jewish scholars are still remembered in the traditional texts. Others from non monotheistic faiths had their own significant share of the Pan-Islamic civilization.

The scientific brilliance of the Arab nation was born on the Arabian Peninsula in the 7th century A.D., after the Prophet Muhammad called people to the religion of Islam. One of the results of this religion was the unifying of Arab tribes, the purification of their hearts and improvement of their souls. The Islamic state was established in 622 A.D. by the immigration of the Prophet and Muslims from Mecca to Medina. During the century after his death (632 A.D.), the area of the new Arab-Islamic Empire increased to include a large area of the globe, Central Asia and to India and across North Africa to southern Europe in 711 A.D., resulting in an Islamic world order throughout the following millennium. Furthermore, Arabs and Muslims converted southern Spain to a center of a thriving civilization, so-called Al-Andalus or Andalusia. Arabs had demonstrated a passion for knowledge which led to the birth of a long lasting world civilization. However, several achievements of the golden age of Islam were based on the old knowledge of ancient Egyptians, Greeks, Persians, Jews, Romans, Indians and Chinese. These legacies and sciences were translated, examined and revised. Then, scientists and researchers built on them, and added what they discovered and invented. This led to an extraordinary growth in all divisions of science, and made contributions of vital significance to science, medicine, technology, philosophy and art (Turner, 1997; Falagas et al., 2006).

One of the most famous aspects of the Islamic civilization was Islamic medicine, which was described as a thousand years ahead of its time. Medicine was a career of science and philosophy that was based upon culture and religion (Falagas et al., 2006; Syed, 2011). First, hospitals or Bimaristans were luxurious, well-organized and well-equipped. All people were served free of charge without any bias or prejudice to their religion, color, age, sex or social status (Syed, 2011). The first hospital was built in Damascus in 706 A.D. Another hospital was placed in Baghdad in 982 A.D (Savage-Smith, 2011). In these hospitals there were huge libraries that contained up-to-date books. Patients' records were kept in the hospitals. There were inpatient and outpatient departments. Moreover, there were mobile hospitals that provided services to remote areas, prisons and battle fields. In addition to receiving treatment, patients were given a sum of money when they were discharged, in order to support them financially during their convalescence (Syed, 2011).

Medical education also took place in these hospitals. Candidates for medical study first received basic preparation in anatomy, Alchemy, medicinal herbs, pharmacology, toxicology and the use of antidotes. These students then received full clinical training in small groups led by experienced physicians, for ward rounds, reviews, lectures and discussions. In addition, therapeutics, pathology and diagnosis and judgment were taught. Medical students were taught to examine six major signs and symptoms: patients' responses, the location and nature of pain, excreta, effluvia and swelling of the body. Furthermore, the feel and color of the skin whether dry, moist, flabby, cool or hot would be noted as well. In addition, students would check yellowness of the eyes for jaundice and the ability of a patient to bend his back as a sign of lung disease. The curriculum was usually internal medicine though some students would specialize in surgery, orthopedics or ophthalmology. Many surgical procedures such as amputation, excision of hemorrhoids and varicose veins and cataracts were known and commonly performed. Psychotherapy was taught and practiced. Obstetrics was practiced by midwives. In Baghdad in 931 A.D., the chief physician, Sinanibn Thabitibn Qurra was ordered by Khalifa Al-Muqtadir to examine all doctors upon the death of a patient resulting from a physician's error. In that year, over 860 doctors were examined in Baghdad alone. Since then, licensing examinations became mandatory and were administered in many different districts. Moreover, earlier in the days of Al-Mamun and Al-Mutasim, famous Arab Muslim Khalifs, pharmacists were required to pass exams to be licensed for work (Syed, 2011).

Within Islamic civilization, pharmacology became an independent discipline and was differentiated from alchemy and medicine. The first pharmacies were established in 754 A.D (Falagas et al., 2006). During those times, scholars developed modern techniques, such as, crystallization, distillation and calcinations. They introduced new drugs such as, senna, camphor, mercury and opium. Furthermore, it is worth mentioning that many current chemical and pharmaceutical terms were derived from Arabic, for instance: drug, alcohol, alkali, cotton, elixir and syrup (Falagas et al., 2006, Syed, 2011).

Many scholars became famous in Arab medicine due to their achievements and discoveries, such as: Yuhannaibn Masawayh (777-857) and his student HunaynibnIshak Al-Ibadi (809-874), al Tabari (838-870), Abu Bakr Muhammad ibnZakariyaal-Razi (Rhazes) (846-930), Al-Zahravi (Abulcasis, Alzahravius or Bucasis) (930-1013), IbnSina (Avicenna) (980 - 1037), Ibn Al Haitham (960-1040), Ibn-Zuhr (Avenzoar) (1093 - 1162) and Ibn Al Nafees (1213 - 1288), among many others (Falagas et al., 2006; Haddad, 2008; Saad, 2005; Abdel-Halim,

2005). These scholars possessed great wisdom, for instance, al-Razi, who in order to identify the most hygienic area to build a hospital in Baghdad, hung fresh pieces of meat in different places of the city and looked for the one that decomposed the slowest (Syed, 2011). Fortunately, Arab scholars wrote many important books, such as: 'Al-Qanun' (Canon of Medicine) which was the masterpiece of IbnSina. This book contains more than one million words, covers topics in physiology, pathology and hygiene, and has been translated into Latin and Hebrew (Falagas et al., 2006; Syed, 2011; Saad et al., 2005). 'Kitab al-Hawi' (The Comprehensive) is another famous book which is a medical encyclopedia consisting of 30 volumes, written by al-Razi, which has also been translated into many languages (Falagas et al., 2006, Saad et al., 2005). These two books serve as brief examples of the many other books such as: 'Al-Tasrif' an encyclopedia of surgery by Az-Zahravi (Syed, 2011), 'Al-Masail' a pharmacology reference by Hunayn (Syed, 2011) and 'Poisons and their Antidotes' by Abu Musa Jabir ibnHayyan, the well-known Arab alchemist, which describes poisons from a pharmacological aspect (Saad et al., 2005). Furthermore, Daoud Al Antaki is an Arab physician who lived in the 14th century and published a book called 'Tazkirat' which summarizes medicinal herbs (Saad et al., 2005). Finally, it is important to mention that Ishaq bin Ali Al Rahwi (854 - 931) was the first to describe a peer-review process in his book called 'Ethics of the Physician'. Al Rahwi stated that the performance of each physician should be tracked via a local council of physicians. This council should examine physician's notes after any patient dies, following which a physician can be sued for mal-practice of medicine (Spier, 2002).

This is the legacy of the Arabs. However, the widespread spirit of pacifist life made Islamic lands open and relatively easy targets for invaders whose aim was mainly to take advantage of the then wide spread affluence. This led to the collapse of the sophisticated economic system and of these hospitals, as well as research and education facilities and eventually led to the decline of Islamic civilization. Former Arab medicine gradually disappeared and became nearly extinct eventually being replaced by Western medicine. Although, as recently as the last century, some Islamic science and medicine was still practiced and accepted in Arab countries. Patients seeking traditional treatments were treated by traditional healers, so-called "wise men". In every village there was one or more traditional physician, herbalist, traditional ophthalmologist, traditional orthopedic doctor, Hajjam, who treat with cupping, as well as spiritual healer. Midwives played a vital role in society, where they educated women and gave them important knowledge about how to take care of themselves and their babies. In addition, they were involved in marriage arrangements.

An example of a notable practice in traditional medicine is the use of fenugreek (*Trigonella foenum-graecum*) in orthopedic fractures. Also, the old theories of the hot and cold, male and female were known. But, because of the decreased number of students of this science, Arab traditional medicine became nearly extinct with the death of most of its practitioners. Now, those healers are very rare, and mostly elderly. They learned from other therapists, and studied hard what survived of the authentic Arabic medical books. In addition, women acquired healing knowledge from their mothers as a kind of domestic skill, to be able to care for themselves, their children and families, for example, treating wounds, fever, diarrhea, constipation, worms and so on [HajjahKhadijah, Ali Al Rabti, personal communication].

Even though herbalists who are qualified and experienced are the minority, now in Arab countries, there are many who have prospered from trading herbal medicine without

appropriate knowledge (Saad et al., 2005). It is regrettable that old cities in Arab countries, such as the Old City of Tripoli, Libya, that used to be a place for practicing traditional medicine, have become centers for shops selling medicinal and non medicinal herbs according to customers' requests.

Types of treatment

1. Spiritual

This type of treatment depends on the personal belief system. Given the diversity of beliefs in the Arab world, a variety of spiritual treatments existed.

First, a method practiced by all believers and Muslims, is the enforcement of the heart by making it rely on Allah the Creator of all things, to trust in Him and turn to Him. The heart is also strengthened, by giving charity and praying, repenting and seeking forgiveness, and treating all creatures, such as human beings and animals with kindness. Moreover, strengthening the heart can come from helping the needy and bringing relief to the distressed, in order to gain good deeds and become blessed by Allah. Each person should entirely trust in Allah, by making the heart remain connected to Allah and rely on Him and be confident in Him. In case of illness, each patient must turn to Allah along with the search for a treatment. When the heart is connected to Allah the Almighty, the Lord of the universe, the Creator of the disease and medicine, and the mastermind of nature who administers it in the way that He wills, the patient becomes stronger and is helped with resistance to the disease and oppression. Patients further believe that those whose hearts are not connected to Allah will not gain these benefits as discussed in the book by Al-Jawziyya.

It is stated in the Qur'an repeatedly, that whoever turns away from Allah he shall surely lead a depressed, strained and miserable life (from The Meaning of the Quran-TaHa: 124). It is also known that believers do not get depressed, whatever the pressure surrounding them, because their hearts are connected to Allah and feel safe. One principle of Islam states that: people are all equal; there is no difference between an Arab or non-Arab, black or white, except in faithfulness and good deeds. The most honorable persons in Allah's view are those who are most pious (from The Meaning of the Quran- Hujurat: 13). It is important to mention that correct faith in Allah and good deeds go hand in hand in Islam and help a man seek the pleasure of Allah. It is also not permissible for one to attribute purity to his/her soul (from The Meaning of the Quran- Najm: 32); Only Allah can know the righteous believers. Correct faith is an influence in healing which is beyond a doctors' knowledge as discussed by Al-Jawziyya.

There are other approaches of spiritual treatments practiced by some Arabs according to their beliefs. These approaches often require a spiritual intermediary, or a person who leads the treatment process who possesses particular specifications and special skills. Examples for such approaches include the Sufis' rituals, such as the whirling dervishes. In addition, a few practice black magic and sorcery. However, several Muslim countries, including Saudi Arabia, greatly discourage this last practice and even impose the death penalty as a sentence for its practice.

2. Physical

This type of treatment includes all therapies that are accomplished via physical interventions. Examples are phlebotomy, cauterization and cupping. These techniques are ancient medical procedures practiced by the Chinese, Egyptian pharaohs and other cultures, as depicted in their writings. Olden day Arabs learned this practice from neighboring cultures and were later validated by Islam as the best form of

treatment as discussed by Al-Jawziyya. Such techniques were mentioned in authentic Islamic texts, in which the healing effects were described to be due to three things: the incision of the cupper, drinking of honey, and cauterizing with fire. However, cauterizing with fire is not preferred, as discussed in the hadith books, Sahih al-Bukhari 5681 and SunanibnMajah 3491. The benefits of honey will be discussed later. It is worth mentioning that the words "incision of cupper" refers to both the acts of phlebotomy and cupping.

Phlebotomy or bloodletting (Alfasd) is a process of making an incision in a large vein and letting a quantity of blood gush out. According to IbnSina, this method was used either in case of excessive blood in the body or in case of abnormal blood quality. Phlebotomy can be performed at different sites depending on the disease that the patient suffers from. For example, arm veins when incised, may help in the treatment of diseases related to the liver, spleen and lung or head and neck. Nevertheless, phlebotomy is no longer practiced today due to its replacement by medicines. However donating blood is a process that resembles phlebotomy.

Cupping or Alhijamah in Arabic simply means to suck. It is practiced as a craft, and is known among people to involve the sucking of blood from the superficial layers of the skin, at specific points depending on the type of illness. Alhijamah remained very prevalent until people learned newer western approaches to medicine and relied on them, leading to a near loss of this craft. But now, there is a strong move toward reviving this craft in Arab countries such as Egypt, Libya and Gulf countries. Further, a growing number of people in these countries are now eager to see Alhijamah become a standard medical procedure.

There are many kinds of Alhijamah, such as the kind that is done using blood sucking leaches. The second one is called dry cupping, which is an ancient Chinese practice, and does not involve removal of any blood from the body. It is done using cups directly on the skin at certain points along energy lines. The third kind is wet cupping which is the main focus of the discussion. However, phlebotomy is also considered a kind of Alhijamah.

Wet cupping involves the use of cups designed to pool and collect bad blood from underneath the skin. This sucking effect is achieved either by the use of a vacuum connected to the cups, or by burning a small piece of cotton or an equivalent, placed inside the cup directly onto the skin, to create negative pressure (Fig. 1). The cups are left in place until sufficient erythema appears on the skin (Fig. 2), at which point the cups are removed and small longitudinal incisions in the skin are made at the points of redness. The length, depth and number of these incisions varies with each patient. The cups are then replaced over the incisions and allowed to suck the blood out, under negative pressure, at a slow rate until no more blood is released or enough has been collected (Fig. 3). Finally, the points of cupping are cleaned and covered by honey and suitable dressings (Fig. 4). The complete blood count (CBC) test performed on this blood, collected by cupping, shows results that differ from that of ordinary venous blood [Dr. Abdunnaser El-Magboub, Personal communication].

It is widely accepted that the benefit derived from Alhijamah is due to the blood released being bad blood containing bad substances which are the cause of current or future diseases. There are many theories about what these bad substances may be, such as aging blood cells that can no longer carry out their normal function. Another theory is that the release of blood removes blocks within the lymphatic circulation. Since illnesses can be described as "hot" or "cold", the benefit from Alhijamah can only be seen when it is used to



Fig. 1. The first step of wet cupping or Alhijamah which is placing the cups over the points of cupping by creating negative pressure inside each cup. Here the negative pressure is created by burning pieces of paper inside the cups. The bottom two cups are located over AlKahel points, the area located between the shoulders on both sides of the spine.



Fig. 2. The congestion and redness of the skin, where the longitudinal incisions will be made. After this step, cups are replaced again over the same points, vacuumed and allowed to suck blood and plasma.



Fig. 3. The bleeding from the incisions. This picture was taken after removal of the cups for the second time, so the bleeding in this picture occurred as a result of negative pressure inside the cups that sucks blood and plasma out at a slow rate.



Fig. 4. The application of a layer of honey over the point of cupping.

treat “hot” illnesses because the removal of blood causes cooling of the total body mixture as discussed by Al-Jawziyya.

The most important area for wet cupping is known as AlKahel, which is the area located between the shoulders on both sides of the spine (Fig. 1). This may be a point of slowly circulating blood in which aging cells and impurities concentrate. The various points for wet cupping used are known by experience. Generally, these points fall along energy lines, as with acupuncture points, and around lymphatic nodes, blood vessels and nerves.

Wet cupping is preferred during the spring time especially on the 17th, 19th or 21st days of the lunar months during that season as discussed by Al-Jawziyya. This may be because the effect of the phases of the moon on the liquid in the body resembles the effect on the earth's tide.

There are known precautions and contraindications for Alhijamah. In general, the patient should avoid showering and sexual intercourse before and after Alhijamah to sustain strength.¹¹ Further, the patient should relax for a day following Alhijamah, to avoid disturbing the energy balance, and eat easily digested food such fruits, vegetables and carbohydrates while completely avoiding milk and all other dairy products.

Many clinical trials have been conducted to study the use and effectiveness of different types of cupping in the treatment of pain.

Farhadi et al. (2009) in Iran, where wet cupping for 20 min for three days was used in 98 patients suffering from non specific low back pain of 4 week or more duration.

Michalsen et al. (2009) in Germany, where wet cupping for 10 min once was applied in 52 patients suffering from carpal tunnel syndrome.

Hong et al. (2006) in China, where dry moving cupping was used for 11 days in 70 patients suffering from non specific low back pain of 1 week to 3.1 year duration.

Huang et al. (2006) in China, where dry cupping once a day for 3 days was applied in 60 patients suffering from cancer of 5-17 month duration.

Ludtke et al. (2006) in Germany, where wet cupping for 10 min once was applied in 20 patients suffering from brachialgia paraesthetica nocturna.

Zhang et al. (1997) in China, where wet cupping once a day for 6 days then once every other day for three times was used to treat 45 patients suffering from acute trigeminal neuralgia of 6 day to 4 year duration.

Xu et al. (2004) in China, where wet cupping for 15 min once a day for 7 days was used to treat 80 patients suffering from herpes zoster of 1-3 day duration.

In the previous seven trials, control groups received the usual care using analgesics such as opioids or NSAIDs, heating pads, psychological care and/or music therapy. However, anti-viral therapy was used for the control group in the last trial (Xu et al., 2004) in China. The rate of response was calculated as well as pain levels. The latter was measured using several techniques such as a visual analogue scale. In all previous trials, the response rates were higher and pain measurements were lower in cupping groups than in control groups (Kim et al., 2011). All these trials suggested that cupping is a successful pain therapy with promising effects on other illnesses (Shaban, 2011). However, many of these trials are either of insufficient quantity or quality to establish the effectiveness of cupping (Kim et al., 2011). Therefore, more clinical trials are needed to study the effectiveness of cupping in the treatment of different medical conditions (Kim et al., 2011; Shaban, 2011).

Finally, cauterization or Alkaii is presented. In the old days, Arabs turned to cauterization as a last resort. It is highly recommended, by religion and by tradition, to keep cauterization as a last choice of treatment as discussed by Al-Jawziyya. Arabs practiced this technique in the past, and even now the Bedouin and desert dwellers still use cauterization as a form of treatment. Cauterization is done by using iron bars of different end shapes depending on the suitability of the various shapes for each case. The bars are put directly in an open flame until they are red hot. Then they are placed on the skin while applying light pressure for one second or so. The points of cauterization are decided depending on the pathological condition, such as cauterizing the position between the pinky and ring finger to treat jaundice or the bottom of the foot for rheumatism. These happen to be the same points identified in Chinese medicine as energy paths and reflective areas. In addition, cauterization can be used to treat sciatica. Al-Razi in his book *Al-Hawi* mentioned another type cauterization, which is achieved by placing a piece of wool soaked in oil on a place of pain, then burning a piece of mountain goat stool until it becomes a cinder, placing it over the wool and leaving it until the patient feels the heat and the pain calms. Unfortunately, inexperienced practitioners as well as ignorance have gone beyond reasonable limits of cauterization causing tragic consequences.

In the past, the main use of cauterization was to control bleeding and hemorrhage caused either by injury or by phlebotomy. Al-Zahrawi, the famous surgeon, used cauterization by iron to control bleeding during surgery (Syed, 2011). Controlling bleeding during surgery is still a reason to use cauterization these days where electrical cauterization is used. Electrical cauterization or cold cauterization is used now in the treatment of warts as well. Furthermore, IbnSina used cauterization in the surgical treatment of cancer; where he stated that tumors should be excised boldly and widely, all blood vessels that supply the tumor should be removed, and the affected area must be cauterized (Syed, 2011). It is possible that the technology of targeted hyperthermia using metal nanoparticles, for instance gold nanoparticles, directed at treating cancer noninvasively is just an innovative and advanced form of cauterization (Cherukuri et al., 2010).

By natural products

Arabs have used a wide range of natural products in treatment. In traditional Arab medicine, doctors and healers over the centuries have used medicinal plants, honey and animals in the treatment of diseases. In addition, the water of the well,

Zamzam, has been used by Muslim-Arabs to seek blessings as well as in spiritual and physical therapy.

The water of Zamzam is named after the well it comes from, known as the well of Zamzam. This well was dug in Makkah (Mecca) by the angel Gabriel 4000 years ago as stated in Muslim history. This happened during the days of the prophet Ibrahim (Abraham), when his wife Hajar and their little son Ismail (Ishmael) had been left alone in the dessert area of Makkah. Since then, this well has not drained. In addition, many local and international investigations have been carried out on Zamzam water that have revealed that this water is beneficial, potable, and its main source is naturally pure and germ-free. Furthermore, Zamzam water contains higher percentages of all inorganic elements, such as calcium, potassium, sodium, magnesium, chloride, fluoride, bicarbonate, nitrate and sulfate, when compared to tap water (Al Zuhair and Khounghanian, 2011). This could be the reason that drinking this water leads to a feeling beyond satiety.

Honey is another natural product that Arabs frequently used as a therapeutic agent. Honey has been mentioned explicitly in the Quran to possess healing powers (from *The Meaning of the Quran- Nahl: 69*). In old Arabic texts, such as *Al-Qanun* by Sina, *Tazkirat* by Al Antaki and *Al-Teb Al-Nabawi* by Al-Jawziyya, honey was mentioned as a natural product of multiple uses. It cleans different organs in the body such as liver, stomach, intestine, kidney, bladder and blood vessels. In addition, honey is useful in case of cough, sputum and cold, where it is described as a "hot" remedy that counters "cold" diseases. It works as an antiseptic and diuretic, and is good for treating animal bites. Honey is also known to kill lice and nits. It is good for vision, for hair care, tooth and gum care. Also, it is nutritious and acts as a preservative for food, meat or even corpses. Furthermore, it is safe and has few side effects. In addition to previous usages of honey, people nowadays use honey for facial and skin care, to help in wound and burn healing and in minimizing scars.

Unfortunately, good resources for the use of animals in treatment could not be found. However, it is known that there is a specific kind of reptile indigenous to Mizda/Libya called spiny tailed lizard (*Uromastix acanthinura*) or Ad-Dab. This reptile is used extensively by people in Libya to treat cancer by cooking its meat and feeding it to cancer patients.

Finally, medical plants are heavily used in Arab households, be it local or imported. These uses come from inherited traditions or from religious scriptures. Plants mentioned in religious sources are used in a similar fashion across all Arab countries, such as the use of pomegranate (*Punica granatum*) for treating peptic ulcers. While with plants used by inherited traditions, their applications greatly vary by location. The uses of these traditional plants are many and beyond the scope of detailed mention. Therefore, the discussion will be limited to those plants used in Libya.

Uses of medical plants in Libya fall into two categories. The first kind, such as orange flower water and vinegar soaked socks for fever reduction, is widely known and practiced by everyone. While the second kind, requires visiting specialized herbal medicine stores, such as the use of *Helichrysum stoechas* (shrubby everlasting) or *Phagnalon rupestre* (African fleabane) for the treatment of renal pain.

Many of these medicinal plants have other non-medical uses in households such as spices, hot drinks, hair dyes or perfuming plants. Further, a single plant may have several different therapeutic uses based on the part of the plant used, the way of preparation or the route of administration. As an example, pomegranate peels may be used for peptic ulcers while the fruit may be used for its beneficial properties for the liver and gall bladder. Further, *Linum usitatissimum* (flax) can

be used to prepare: a paste of seed powder and hot water for treating skin inflammation, an ointment prepared of seed oil and egg whites for treating burns, and a mixture of seed powder with honey and lemon for treating cases of chronic kidney stones. Lastly, boiled mint can be used as an antiseptic gargle for the mouth and throat, or can be drunk for calming and relieving abdominal pain.

Some medicinal plants, beyond their medical and household uses, are also considered important for magic and witchcraft such as, *Ferula assafoetida* (giant fennel), *Styrax benzoin* (loban), and *Crocus sativus* (saffron). These plants are discussed in books written in Arabic on the plants of Libya by Al-Gady. Sometimes, a plant's magical and witchcraft uses are

considered to be its main uses, greatly overshadowing any of its other uses.

The medicinal use of black cumin seeds (*Nigella sativa*), known as the seed of blessing, is considered very controversial because of its mention in religious texts encouraging its use as a cure for all diseases except death as discussed by Al-Jawziyya. In our times, it has become widely researched with many articles describing its many benefits. A quick search of the term "*Nigella sativa*" entered in pub med or "effects of *Nigella sativa*" entered in google scholar search engines retrieves more than 300 and about 4,000 hits respectively for the beneficial effects of *Nigella sativa*.

Table 1 lists a description and the medical uses of several

Table 1a. Description of medicinal plants and their uses in the Libyan traditional medicine

Names	Used Parts	Active Constituents	Main Use(s)	
			External Use(s)	Internal Use(s)
S. <i>Allium cepa</i> L. E. Onion C. Basal- بصل	Fresh fruit	Sulfur compounds Vitamine C Gluconine	Removal of the accumulated dead skin on the toes, treatment of hair loss and cataracts	It is used as antihypertensive, hypoglycemic, digestive, gas reliever, Anthelmintic, cough suppressant and to treat inner hemorrhoids
S. <i>Allium sativum</i> E. Garlic C. Thum- ثوم Note: excessive consumption may harm vision and stomach mucous membranes	Fruit (bulb)	Sulfur compounds Vitamins - Gluconin Antiseptics – Hormones	Topical analgesic for tooth ache and outer ear pain. Antidandruff. For wounds, sores and for chronic suppuration of the gum.	Strengthen the immune system and fortify the body. For that it's recommended for diabetic patients. Antihypertensive, good for constipation and diarrhea, as anthelmintic and used for acute influenza.
S. <i>Amygdalus communis</i> L. var. amara DC. E. Bitter Almond C. Lawz Mur- لوز مر	Seeds	Oils – Proteins – Vitamin E – Amygdalin Prunasin	-	As diuretic, expectorant, cough suppressant especially for whooping cough, and to prevent heart palpitations.
S. <i>Anethum graveolens</i> E. Dill C. Shebt, Shabt- الشبت	Seeds	Volatile oil consists of : Carvone, Limonene&Phellandrede	Gargling, eye lotion and toner.	It is used in cases of indigestion, stomachache, gas relief and to increase breast milk.
S. <i>Artemisia absinthium</i> E. Absinthe wormwood C. Shajarat Omna Mariam – شجرة أمنا مريم Note: very toxic plant	Leaves and flowers	Volatile oil consists of Thujone	-	To induce contractions and cramps of the uterus to expel a dead fetus.
S. <i>Artemisia campestris</i> E. Field sagewort C. Al-Shaal- الشعال	Leaves	Volatile oil – Alcohols Flavones glycosides	-	In simple fractures and bruises, as analgesic, good for muscle pain due to colds and for scorpion bites
S. <i>Artemisia herba-alba</i> Asso E. White wormwood C. Al-Shieh- الشيح Note: very toxic plant	Leaves Flowers	Santonin	-	Anthelmintic and anti-parasitic.
S. <i>Artemisia judaica</i> L. E. Wormwood C. ShiehIraqi- شيح عراقي	Leaves Flowers	Santonin Volatile oils	-	As toner, hypoglycemic agent, cold remedy and as anthelmintic for circular worms.
S. <i>Chamomilla pubescens</i> (Desf.) Alavi&Jafri E. Chamomile C. Flaia- فلية	Flowers	Azulen – Anthamedine Anthamic- Matrican	To treat eczema, wounds, sores and nail inflammations. It is used as analgesic for infected eye and for gargling.	To relieve all kinds of pain and spasm of GIT, UT and uterus. As a decongestant, and as a calming agent in case of insomnia.
S. <i>Cinnamomum zeylanicum</i> Nees E. Cinnamon C. Kerfa- قرفة Note: contraindicate in pregnancy. Cinnamon is a vasodilator, excessive consumption may lead to internal hemorrhage.	Bark	Cinnamaldehyde, cinnamic acid, carbohydrates	-	Activate blood circulation, causes uterine contraction recommended for postpartum, uterus infection and in cases of delayed menstruation.

S.: Scientific Name, E.: English Name, C.: Common Name (in Libya).

medical plants as mentioned in Libyan traditional medicine books. It is important to note that for some of these plants there may be different uses in other Arab countries as discussed by Al-Gady. Note that the active constituents of *Helichrysum*

stoechas and *Phagnalon rupestre* were mentioned as unknown in Libyan traditional medicine books and have been recently described (Garcia de Quesada et al., 1972; Rios et al., 1991; Gongora et al., 2002).

Table 1b. Description of medicinal plants and their uses in the Libyan traditional medicine (continued)

Names	Used Parts	Active Constituents	Main Use(s)	
			External Use(s)	Internal Use(s)
S. <i>Crocus sativus</i> L. E. Saffron C. زعفران- Zafaran	Threads (red-colored stigmas)	Picrocrocin glycoside	To treat muscle spasm due to colds. And to treat weak muscle.	-
S. <i>Daturastramonium</i> E. - C. فدة- Faddah Note: very toxic plant	Leaves and Flowers	Hyoscyne, Hyoscyamine, Atropine, Meteloidine, Scopolamine	-	Smoked as a cigarette a for asthma, hemorrhage and motion sickness. As local anesthesia during labor.
S. <i>Ephedra altissima</i> Desf E. Ephedra C. علندة- Alnda	All green parts	Ephedrine Pseudo Ephedrine	-	As a bronchodilator used in treatment of bronchial Asthma
S. <i>Ferula assa-foetida</i> L. E. Asafetida C. وشق- Wshag	Gum and seeds that adhered	Volatile oil with bronchodilator effect Ferulic acid ester	-	As bronchodilator and as anti-psychoic.
S. <i>Ficus carica</i> L. E. Fig. C. تين، Karmous- Teen، كرموس	Fruits	Antiseptic, emollients, Protase, Lipase, Distase	For wounds and sores.	For constipation, especially in children and elderly patients.
S. <i>Helichrysum stoechas</i> (L.) Moench E. - C. عشبة الأرانب- Oshbat Al Aranib	All green parts and flowers	hydroxyisopenten-acetophenone, triterpenoids, steroids and antimicrobial compounds	-	For kidney stone and to relieve pain caused by urinary tract diseases.
S. <i>Hibiscus sabdariffa</i> L. E. Hibiscus C. كركديه- Karkadahe	Flowers	Tartaric acid, Maleic acid, Calcium oxalate, Vitamin C, Tannin.	-	Antihypertensive agent, laxative, diuretic, and source of vitamin C.
S. <i>Iris germanica</i> L. E. Iris C. كعب الطيب- KaabTaib	Leaves and roots	Carpic acid, benzoic acid, myristic acid, iridin.	-	As a diuretic and laxative, to increase breast milk, induce vomiting, and as a cold remedy.
S. <i>Lawsonia inermis</i> L. E. Henna C. حناء، حنة- Henna	Leaves	Lawson, Resins, Hannatanin, Alpha & Beta Ionone	For skin allergy, nail and toe infections and for wound healing.	For stomach inflammations.
S. <i>Linum usitatissimum</i> L. E. Flax C. كتانية- Ketania	Dry seeds	Oil and Gel substance	For skin inflammations that come with pus, boils, sores and flakes. For burns.	Good for dry cough, to relief pain of peptic and duodenal ulcers, gallstones and kidney stones and urinary tract infections.
S. <i>Mentha piperita</i> L. E. Peppermint C. نعناع- Nanaa Note: contraindicated in case of vomiting. Causes dry mouth.	Leaves (before flowering in spring) and parts of green stems	Menthol, Carvone, Limonene, Phellenderene, Pinen and others	To treat skin inflammation. As mouth wash.	To relieve colic, gas, stomachache and uterus and menstrual pain. Tonic.
S. <i>Nigella sativa</i> L. E. Black cumin seeds C. حبة البركة- Habat Al Barakah كمون أسود- KamounAswad	Seeds	Nigellone	Migraine.	Good for heart and liver. Gas relief.
S. <i>Olea europaea</i> L. E. Olive C. زيتون- Zytoon	Fruits, Oil and leaves that fall spontaneously.	Carotene	Gargling for gingivitis and other oral inflammations, eye inflammation, for eczema and in case of skeletal muscle contraction due to seizures.	For constipation, and gallstones.
S. <i>Papaver somniferum</i> E. Opium poppy C. خشخاش- Khashkhash	Fresh Fruit	Morphine, Papaverine, Narceine, Narcotine, Thebaine	-	Hypnotic.

S.: Scientific Name, E.: English Name, C.: Common Name (in Libya).

American Indian traditional medicine (Chumash), similarities and differences

Medicine among American Indians is a valuable and quite diverse legacy that comprises numerous distinctive approaches. It is a profession that combines beliefs and knowledge of plants,

but one in which the spiritual and social aspects greatly dominate over the scientific aspect (Adams et al., 2010). Nevertheless, due to critical social situations of American Indians, this legacy has remained in the shadows. Recently, as a result of the liberation of Indian Americans and their debut to

Table 1c. Description of medicinal plants and their uses in the Libyan traditional medicine (continued)

Names	Used Parts	Active Constituents	Main Use(s)	
			External Use(s)	Internal Use(s)
S. PetroselinumsativumHoffm E. Parsley C. Baqdonis, Madnoos- بقدونس، معدنوس Note: excessive consumption impedes blood circulation	Root Leaves Fruit	Vitamin B Volatile oil consists of: Apiole&Apilin	Facial lotion especially for freckles, and for sprains.	For menstrual pain, stomachache, edema, and for breast inflammation due to accumulation of milk.
S. Phagnalonrupestre L. E. Phagnalon C. Oshbat Al Arnab- عشب الأرنب	Whole plant	Phenolic compound and acetophenonepicein	-	For kidney stones and to relieve pain caused by urinary tract diseases.
S. <i>Phagnalonrupestre</i> L. E. Pomegranate C. Romman- رمان	Whole plant peels	Phenolic compound and acetophenonepicein Tannin, Pelletiarine	- -	For kidney stones and to relieve pain caused by urinary tract diseases. Healing of peptic ulcer, acute diarrhea, anthelmintic and as toner for the stomach.
S. Rhustripartita E. Sumac C. Sumac سماق Al-Jedary- الجداري	Bark (in spring)	-	-	For peptic ulcer, and as appetizer, to gain weight.
S. Rosa sp. E. Rose C. Ward- ورد	Leaves, Seeds, flowers right before opening, Patels.	Geraniol, Camphor, Tannin	-	Has refreshing and sedating effect, used in psychiatric patients. Also used to treat diarrhea and urinary tract infections.
S. Rosmarinusofficinalis L. E. Rosemary C. Kleel- كليل	Flowers and leaves (at morning)	Terpenes, Borneol, Cineol	Facial cleaner, to treat allergic eyes (spring allergy), and as a gargle.	For rheumatic arthritis, strengthening the stomach, digestive, nerve stimulant. Good for menstrual pain and irregularity, and for inflamed gall bladder.
S. Salvia officinalis L. E. Sage C. TefahEshahi- تفاح الشاهي	Whole plant	Tannin, Terpene hydroxide	-	For dizziness, irritability and anxiety. Cold remedy. Diuretic.
S. Solanummelongena E. Eggplant C. Bathinjan- باذنجان	Fruits and Leaves	Rich of Nutrition, emollient substance	Fruits are used as compresses to relief tonsillitis. Leaves are used for simple burns and as compresses for external hemorrhoids.	-
S. Solanumnigrum E. Black nightshade C. EnabAtheeb- عنب الذيب	Fruits and Leaves	Solssonine, Solatine, Solamidine, Solamargine, Demissine	For skin diseases.	As laxative, and for liver diseases.
S. Solanumtuberosum L. E. Potato C. Batata, Batates- بطاطا، بطاطس	Tubers	Full of nutrition, vitamin B & C	First and second degree burns.	Toner, especially for diabetic patients and in cases of colds or renal deposits.
S. Styrax benzoin Dryander E. Gum benzoin/ Gum Benjamin C. Jawi- جاي	Resin secretions	Benzoic acid, Balsamic acid, Cinnamic acid.	For toothache, as antiseptic for burns.	For cough, as expectorant, diuretic and toner. Has a spiritual and psychiatric uses.
S. Syzygiumaromaticum (L.) Merr.& Perry E. Clove C. Gronful- قرنفل	Dry buds	Eugenol, Sesquiterpenes (Alpa& Beta Cariophyllins), alcohols & ketones	Analgesic for toothache, antidandruff.	Intestinal antiseptic, gas reliever.
S. Thymus capitatus (L.) Hoffm. & Link E. Thyme C. Zatar- زعتر	Leaves and flowers	Thymol, Carvacrol, Resine, Tannin	As gargling for sore throat, gingivitis.	For gastro-intestinal infections, lung infection, toner for heart and stomach. For stomach ache, and as anthelmintic.

S.: Scientific Name, E.: English Name, C.: Common Name (in Libya).

Table 1d. Description of medicinal plants and their uses in the Libyan traditional medicine (continued)

Names	Used Parts	Active Constituents	Main Use(s)	
			External Use(s)	Internal Use(s)
S. Trigonellafoenum-graecum L. E. Fenugreek C. Helba- حلبة	Dry seeds	Protein, Carbohydrates, Lipid, Calcium, Iron and Phosphor salts, Vitamin C & D, Saponin, Choline and Trigonelline	To treat boils and different skin inflammations and cracked feet.	As appetizer, to gain weight, help wound healing in diabetic patients, to treat stomach infections, constipation and hemorrhoids, and as a gargle for tonsillitis and TB to remove sputum.
S. Urticaurens L. E. Dwarf nettle/annual nettle C. Horraig- حريق	Whole plant before flowering	Toxic substance, Sekeretin, Iron, Chlorophyll, K, Ca, Na, vitamin A & B	For hemorrhages, inflamed wounds, and for hair loss.	For Rheumatism, Rheumatic arthritis, Anemia, and children's diarrhea. As diuretic. To treat hemorrhoids, uterine hemorrhage, internal hemorrhage and TB. To purify blood.
S. ZingiberofficinaleRosc. E. Ginger C. Zanjabel- زنجبيل	Root	Camphene, linalol, resin, starch, gingerol	-	For cough and cold, as expectorant, laxative, toner, gas reliever, anti-emetic, and for anemia.
S. Ziziphus lotus Defs. E. - C. Sidr- سدر	Fruits, Bark	Emodin, Flavon.	-	Chronic constipation, laxative for children and pregnant women, and patients with hemorrhoids.

S.: Scientific Name, E.: English Name, C.: Common Name (in Libya).

express themselves, American Indian traditional medicine has started to spread throughout the world [Cecilia Garcia, personal communication]. Astonishingly, by reflection on American Indian approaches, there seems to be a logical connection with modern science. However, the delayed discovery by people who are not Indians, of this tradition has led to a postponement in its approval process. California Indian traditional medicine or "Chumash" includes all the popular practices found in the current practice of alternative medicine worldwide, such as, aroma therapy, massage therapy, stone therapy and energy therapy.

Healing power for American Indians is a sacred gift that some individuals are born with, moreover, this gift is found only in certain families. Gifted individuals are usually identified early at a young age, thus ensuring that veteran healers from within the family can provide guidance for them. The medical education system is more advanced in some tribes, for instance, Chumash and Yokuts, where young healers spend a year in a medical school where healing approaches are taught. After that, each young healer spends about seven years as a trainee to a well known healer, until he shows an adequate maturity and wisdom in using the healing gift (Garcia and Adams, 2009).

American Indian traditional medicine is based on many principles, firstly on the principle of addressing the soul before the body, where the soul is the foundation, while the body is the bowl of this spirit. In other words, when symptoms appear in the body, this means that the spirit is sick. It is therefore believed that the spirit should be addressed first which will lead to healing of the body [Cecilia Garcia, personal communication]. The framework of this principle is similar for Chumash and Arabic medicine. However, beliefs radically differ between them. The philosophy of the relationship of the soul and body and the role of spirituality in the treatment and acceleration of healing in Arabic medicine has been discussed above. In general, a Chumash healer rejects dealing with the human body in an absolute technical manner and does not ignore the soul, as is the case with Western medicine [Cecilia Garcia, personal communication].

The second principle is the philosophy of intrinsic energy. Chumash healers believe that there is an intrinsic energy in everything, that healers must exploit during the healing process.

However, the quality and quantity of this energy varies among things, such as: living bodies, dead organs and ocean stones. For instance, dead organs that contained souls at a past time, such as deer antlers and legs, contain higher energy than metals. Moreover, the healer him/her self has an intrinsic energy that he/she should use to treat patients. In addition, the moon has energy as well. Lunar energy plays a role in Chumash healing [Cecilia Garcia, personal communication].

Thirdly, Chumash healers use medicinal plants in the treatment of patients. Chumash people use a wide range of plants to treat their patients (Table 2). Combinations of plants are used as well. Typically, *Salvia apiana* (white sage) is added to most plant preparations, due to the Chumash people's belief in its spiritual effects (Adams et al., 2010, Garcia and Adams, 2009). It is worth mentioning that Chumash do not use honey as they do not have bees. Instead they use sugar balls as sweeteners. Even after the introduction of honey to Indian Americans, they continue to use sugar balls instead, claiming that honey is not compatible with their plants [Cecilia Garcia, personal communication]. In fact, sugar is rarely used in Chumash healing, since sugar can inhibit the ability of plant medicines to heal (Garcia and Adams, 2009). This is considered an important difference between Arab traditional medicine and Chumash, where honey has a key role in Arab traditional medicine.

Since the Chumash medical school in the Cuddy Valley was closed by the US Army in October 1855, no one knows what science was taught to healers (Phillips, 2004). However, some healers escaped into Mexico to preserve their knowledge. Many California Indians were enslaved in the California Missions by the Catholics. Due to this process and the US Army influence, many California Indians lost their religion, healing, language and culture. It is clear that Chumash healers have a good understanding of anatomy and even drew pictographs of internal anatomical features (Adams and Garcia, 2005). Chumash healers also have a good understanding of how to compound medicines, how to make topical and oral preparations, the use of specific plants for specific illnesses, how to perform physical therapy and heat therapy, how to encourage fertility and other issues that require scientific knowledge (Garcia and Adams, 2009). Fortunately, a few healers have returned to California from Mexico, especially

Table 2. Description of some medicinal plants and their uses in California Indian traditional medicine (Garcia and Adams, 2009).

Names	Active Constituents	Main Use(s)
S. <i>Artemisia californica</i> C. California sagebrush, khapshikh	Monoterpenoids, artemisin	Spiritual uses, tooth ache, wound poultice, colds, asthma, arthritis, bronchitis.
S. <i>Artemisia douglasiana</i> C. Mugwort, molush	Cineole, camphor, linalool, monoterpenoids. Sesquiterpene lactones: vulgarin, psilostachynin. Thujone,	Tooth ache, menopause, hotflashes, dysmenorrheal, premenstrual syndrome, spiritual uses. Measles, poison oak rash, urinary tract diseases, asthma, arthritis, ear ache, colds, dysentery.
S. <i>Artemisia tridentata</i> C. Big sagebrush, mountain sagebrush	Coumarins: 7-methylesculin, esculin, umbelliferone. Flavonoids: luteolin, axillarin, eupafolinmonoterpenes, sesquiterpene lactone: artemisin.	Colds, stomach ache, chafing, disinfectant wash, poultice.
S. <i>Daturawrightii</i> C. California jimson weed, thorn apple, toloache, momoy	Scopolamine, hyoscyamine, atropine.	Asthma, nasal congestion, anesthetic, spiritual uses, bruises, skin irritation, stomach ache, fever, aromatherapy. Spiritual uses.
S. <i>Gnaphalium californica</i> C. California everlasting	Flavonoids, diterpenes.	Analgesic, hot and cold poultice, for colds, flus, gastrointestinal diseases.
S. <i>Salvia apiana</i> C. White sage, we'wey	Cineole (eucalyptol), monoterpenoids, diterpenoids: salvinin. Miltirone, thujone.	Anxiolytic, sore throat, colds, flus, stomach ache, tooth ache, asthma, difficult menstruation, antiseptic, deodorant, shampoo to control head lice. Spiritual uses.
S. <i>Salvia mellitara</i> C. Black sage	Aethiopianone, ursolic acid, thujone	Pain, arthritic limbs, flavoring foods, colic, coughs, sore throats, ear aches.
S. <i>Umbellularia californica</i> C. California bay, California laurel, pepperwood, psha'n	Cineole, thujone, umbellulone, sabinene, flavonoids.	Pain, toothache, diarrhea, dysentery, aromatherapy, arthritis, colds, sores, menstrual cramps, food flavor.

S.: Scientific Name, C.: Common Name and Chumash name

during World War 1 and 2, when they could gain US citizenship by joining the US Army. These healers, including the grandparents of Cecilia Garcia, have begun working to reestablish healing in California.

Massage therapy of the Chumash is the sum of all the principles mentioned above. Consequently, one massage session usually takes a long period of time and cannot be done in a hurry. The Chumash massage table is covered by a sheet under which many aromatic medicinal plants are placed, such as: black sage, datura, white sage, sagebrush, mugwort, California bay, California everlasting and incense cedar [Cecilia Garcia, personal communication]. Some of these herbs contain "thujone", an active ingredient that causes hallucinations and convulsions (Table 2; Garcia and Adams, 2009). Since these plants are used for fragrance therapy and are not ingested, there is no danger from thujone. In addition, animal fur, for example fox fur or rabbit fur, is used as a head pillow to comfort patients [Cecilia Garcia, personal communication].

Once the massage table is prepared the Chumash healer starts the massage session by assessing the patient's personality and preparing the patient's spirituality. Assessing the patient's personality and psychology is important for the healer and helps the latter to optimize massage table organization. For instance, if the patient seems to have a lot of fear, it is better to put white sage under the head in order to calm the patient and to regulate respiration, and black sage, the muscle relaxant, nearer to the patient's legs and feet. Also, rabbit fur is the best pillow choice for such patients. As the session begins, the patient inhales vapors arising from boiling of selected medicinal plants in a pot, and later puts his/her feet in this warm herbal tea, in another pot. Then the patient lays on his/her back or front on the massage table, while the healer sits near the patient's head to pray, and blow on and massage the patient's head in order to calm the patient and take him/her to a state of not thinking [Cecilia Garcia, personal communication].

Fragrance therapy plays an important role in these previous steps, as it is believed that fragrances activate the patient's memory. During the session, the patient will remember a distinctive odor, for instance rosemary. In this case the healer

suggests that the patient's body is in need of rosemary and will call for it [Cecilia Garcia, personal communication].

Then the healer starts massaging the patient's body using hands, fingers, deer antlers, deer legs, stones and more depending on his/her skills and ability to use healing energy. It is worth noting that for the patient's back, massage is performed at four main points, which are, the top and bottom points of the back and the two points of "AlKahel" [Cecilia Garcia, personal communication]. These are the same points that Arabs use for cupping, and Chinese use for cupping and acupuncture. Therefore, these points can be called the universal points. However, for massage, the healer applies positive pressure on these points [Cecilia Garcia, personal communication], while for cupping, a negative pressure is applied on these points. Moreover, explorations of American Indian tribe monuments have found different instruments that were likely used for cupping, for example: convex bottom cups and sucking horns (Walker and Hudson, 1993). In addition, some tribes used blood sucking leaches [Cecilia Garcia, personal communication], which is a kind of cupping as has been previously mentioned.

American Indians have practiced treatment by cauterization too, where plants such as corn husk and mugwort were used (Table 2). Among American Indian traditional medicine techniques, snake bites were used in therapy as well [Cecilia Garcia, personal communication].

Therefore, several common practices between traditional Arab medicine and American Indian traditional medicine have been found. The mentioned similarities could be attributed to three main causes:

1. Some medical practices seem to be taken from a single source. This may indicate that these practices are very old, since the time when all human beings were in one place, which is Africa according to the theory of evolution. Monotheistic faith religions believe, as stated in Quran and Bible, that all human beings came from the descendants of Adam. Among the Chumash, the belief is that all people once lived on Santa Cruz Island.

Matricaria matricarioides (chamomile) is found on most continents and is used to treat pain, spasms, inflammation

and anxiety. *Achillea millefolium* (yarrow) is found on most continents and is used to treat pain, inflammation, fevers and to stimulate menstruation (Garcia and Adams, 2009). *Urtica dioica* (nettles) is found on most continents and is used to treat pain, arthritis, diabetes and as a food (Garcia and Adams, 2009). *Artemisia vulgaris* (mugwort) is found on most continents and is used to treat dysmenorrhea, menstrual hot flashes, digestion and to promote dreaming (Garcia and Adams, 2009). These plants may have been transported by people wherever they migrated.

2. Since healers in all cultures must possess clear minds and precise observation, ancient healers actually succeeded in the discovery of the real therapeutic properties of plants. Examples include *Datura* plants that have been mainly used to treat asthma in both traditional Arab medicine (Table 1b) and traditional American Indian medicine (Table 2). *Datura* plants contain scopolamine, hyoscyamine and atropine, which are classified as muscarinic receptor antagonists. These antimuscarinic agents block muscarinic receptors (M3) present in the smooth muscles of the airways leading to relief from bronchoconstriction. In addition, atropine-like drugs inhibit secretions of exocrine glands in the mouth, nose, pharynx and bronchi, which dries the mucus membranes of the respiratory system. The above mentioned effects are the basis for using antimuscarinic compounds in the treatment of asthma (Montastruc et al., 2010).
3. The possibility of convergence of these different cultures, either directly or indirectly at some point in time. It has been mentioned that Arabs after Islamic civilization worked on the old sciences known to them, which included Chinese science. In addition, Arabs likely learned cupping from the Chinese. On the other hand, some studies claimed that there was convergence between Chinese civilization and American Indians, either directly or indirectly (Adams et al., 2010). The current study found a greater similarity between Arab and Chinese medicine than between Arab and American Indian medicine. Furthermore, Polynesians may play a role for cultural convergence between American Indians and Arabs. Polynesians and Arabs are great seafarers and may have interacted in Asian oceans. Polynesians are known to have interacted with the Chumash people. It is interesting that dancing celebration rituals of American Indians are very similar to those of African people, and some Arabs especially in Africa in a ritual called Zarr.

Arab healers have readily accepted some remedies from the American continents, such as potatoes and *Datura stramonium* jimson weed. They have also been open to remedies from China, such as ginger, and India, such as eggplant.

Placebo/Nocebo effects

Whenever traditional healing is discussed, the issue of placebo effects is raised since many believe that drugs are more powerful than plant medicines, and that plant medicines are nothing more than placebos. The facts are that today, the majority of prescription drugs come directly or indirectly from plants and other natural sources. Whenever a Physician administers a drug, the placebo effect occurs.

Placebo/Nocebo effects are the psychological and physiological effects that surround any therapeutic process, and affect treatment outcomes (Benedetti et al., 2005). Placebo refers to positive effects, while nocebo refers to negative effects (Oken, 2008). The mechanism of action of placebos is still under investigation. However, there is growing evidence that placebo effects are achieved by activation of different neurologic systems and endogenous physiological systems that

are important in the release endogenous agonist and antagonists, such as opioid peptides that produce analgesia (Amanzio and Benedetti, 1999; Levine et al., 1978). The dopamine system as well as the endogenous opioid system are considered important players in this context (Oken, 2008; Amanzio and Benedetti, 1999; Levine et al., 1978). In addition, there is a study which revealed that the placebo effect is accompanied by inhibition of beta adrenergic effects on the heart (Pollo et al., 2003). Furthermore, the serotonin system shows a relationship with the placebo effect especially by affecting stress and mood (Lucki, 1998). Different studies have shown strong evidence of the involvement of beneficial immune responses in placebo effects (Oken, 2008).

In addition, placebo/nocebo effects are influenced by mood, personality, the extent of involvement of the patient in treatment processes, and expectancy (Oken, 2008). Expectancy is a key player in placebo/nocebo effects. In other words, treatments most likely succeed when patients expect and hope for success and vice versa (Oken, 2008). This emphasizes the idea of addressing the soul and psychology of patients before dealing with their bodies.

Previously, a diversity of healing hypotheses and approaches that include spiritual, physical, and other natural remedies have been mentioned. The spiritual approach is the one that works on the factors that affect placebo/nocebo effects, for instance: hope, expectancy, mood and personality, which make the spiritual approach of treatment significant. On the other hand, physical approaches previously mentioned such as cupping, cauterization and massage therapy should be subjected to further studies in order to prove their efficacy. However, the effectiveness of using different natural products in treatment has been the subject of countless studies, where the efficacy of many of these products have been proven while others are still under investigation. Of course, the placebo effect is probably elicited by most treatments, physical, natural product and even drugs. The placebo effect should be considered an additive effect to the treatment effect. However, the placebo effect is safer than other treatment effects since adverse effects are not usually found with placebos.

CONCLUSIONS

Arabic medicine is a career combining both elements of science and philosophy based on religion and traditions, and includes a diversity of healing approaches: spiritual, physical, and using natural products. Traditional Arab medicine is the link between ancient medicine which is based on theories, beliefs and spirituality, and modern medicine which is based on scientific evidence from laboratory experiments and clinical trials.

Nevertheless, the discussion of different philosophies of treatment approaches of Arabs and American Indians does not require the reader to accept them, but aims to give readers the opportunity to know these different approaches and to think about them. Thus, traditional approaches are offered as new kinds of therapies that are not currently used in the prevailing Western medicine for the reader's consideration.

CONFLICT OF INTEREST

The authors have no conflicting financial interests.

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