

**Original Article****A Comparison of Chinese and American Indian (Chumash) Medicine****James D. Adams Jr<sup>1</sup>, Cecilia Garcia<sup>2</sup> and Eric J. Lien<sup>1</sup>**<sup>1</sup>University of Southern California, School of Pharmacy, Department of Pharmacology and Pharmaceutical Sciences, Los Angeles, CA, USA and <sup>2</sup>Ensenada, Mexico

Chinese and Chumash traditional medical approaches are similar in terms of disease causation, use of acupuncture or healing touch, plants, spiritual and philosophical approaches. This article provides a brief comparison and discussion of Chinese and Chumash traditional medical practices. A table of 66 plants is presented along with Chinese and Chumash uses of each plant. These uses are compared and contrasted.

**Keywords:** acupuncture – healing touch – phytotherapy

**Introduction**

Both Chinese and American Indian medical practices depend on many medicines, including plant medicines. The doctors who use these plants require training in how to identify the plants, prepare the medicines and use the medicines appropriately. Chinese and American Indian therapy can also depend on healing touch that is used to ease pain and cure diseases. Both approaches to medicine are very practical, depend on the plants that are at hand and share some of the same elements of philosophy. The purpose of this writing is to put American Indian (Chumash) healing into a context that will make it more approachable to Scientists.

Chumash people believe that all life first started on Santa Cruz Island, a channel island off the coast of Ventura, California (1). Chumash people have the religious right to continue these beliefs. There is scientific evidence that people came from Asia to the American continent at several times in the distant past. Although the times of the various crossings remain a subject of research and debate, it is clear that humans have been in the Americas for tens of thousands of years (2,3). These people brought with them tools, spiritual and medical

knowledge, which could account for certain similarities between East-Asian (Chinese) and American Indian health observances and practices.

Chinese medicine is an array of ideas and practices that were developed in China, or adapted from abroad, over the past 3000 years or more (4–6). This historical dating does not necessary imply that the Chinese did not have an oral tradition of health and safety practices prior to this. It only means that there are no known historical records prior to that date.

Due to the predominately unwritten nature of American Indian medicine, the historical dating of some traditions, such as the medical practices of the Chumash people of the southern coast of California, has been difficult for Scientists. Some anthropologists claim to find elements of Spanish or other European traditions in Chumash medical practices (1). Nonetheless, given that traditional narratives are passed down, usually from a person's grandparents, with the expressed understanding that they will be maintained unchanged, it is probably accurate to assume that much of the current medicinal knowledge of the Chumash and other American Indians is of ancient origin.

There has been some speculation that Chinese may have visited California in 1423 and had a direct influence on California Indians before the arrival of Europeans. However, at least one historian claims that a Chinese visit to California was unlikely (7). If Chinese did

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visit California, they had little impact, since no legends of such a visit exist among California Indians. It is, however, very likely that Polynesians visited California and other parts of the west coast of the American continent. Hawaiians brought poppies, cotton and sweet potatoes from America to Hawaii prior to the arrival of Europeans, and left Hawaiian banana plants in Mexico (8). Polynesians may have taught Chumash people how to make plank canoes 1500 years ago (9). Chinese contact with Polynesians is a possibility (7) and may be an indirect way that Chinese could have influenced Chumash people.

The Chinese tradition is that the Chinese ancestors used plants as medicines since the beginning of human existence. The Chumash tradition is similar that plants have always been used as medicines. It may be an innate nature of humans to use plants as medicines. Clearly, all human ancestors, all over the world, have evolved over the past several million years using plants as medicines. If the plants had not worked as medicines, humans would no longer exist.

### Yin and Yang—Sun and Sky Coyote

The core frame of reference in Chinese medical practice is a combination of two key pattern categorization schemas (4): a combinatorial inhibiting-activating model (Yin–Yang), and an associative five-parameter network (five-elements/agents). The Yin–Yang model emanates from ancient Chinese metaphysics that views ontogenesis (in the philosophical sense of the term) as the product of a wavering between an inhibiting and an activating force, called Yin and Yang, and symbolized by a broken (–) and a solid (—) line, respectively. Binary qualities, such as cold and hot, female and male, heaven and earth, find their respective counterparts in the Yin–Yang model. This universal inhibiting-activating model can be applied to any domain of knowledge, including modern natural sciences and chemistry (10). In Chinese medicine, disease is predominantly perceived as a loss of an internal elemental/organic harmony (4,11). This internal state is conceptualized using the five-element theory (11,12). In this model, certain diseases are caused by excessive blood, lymph and Qi stagnation that leads to what is known as heat (inflammation). Qi is life energy and flows in the body as described subsequently. The flow of Qi may be increased by increased flow of lymph or blood, or decreased by decreased flow of blood or lymph. Other diseases are caused by a Qi, lymph or blood deficiency known as cold, such as the common cold. Treatments consist of restoring the lost internal balance and returning the patient to the normal elemental state.

There are many definitions of Qi in Chinese philosophy (4). However, for the practice of medicine, it is useful to describe Qi as the source of life and to recognize that

it belongs to the body. Qi flows everywhere and is rooted in empty space. Qi can be described as life energy and is carried by channels throughout the body (11). Yin and Yang come from Qi (4). Qi is required to harmonize Yin and Yang (4). The five elements contain a pair of Yin and Yang, which are water and fire. However, the five elements are described as coming from Yin and Yang (4).

Other vital aspects of Chinese diagnosis are the patient history and pulse (11). Several pulses are recognized and are used to assess the perfusion of Yang and Qi to various organs. The pulse may be described in several terms such as thin, deep, slippery, thready, slow and rapid. The pulse is used to assess the flow of Qi, blood and lymph throughout the organs. Other diagnostic techniques for assessing the flow of Yang and Qi include the appearance of the tongue and swollen areas of the body. The appearance of the tongue is very important and may be described in many different ways such as pale, red, white greasy fur, thick yellow fur and thin white fur. Swollen areas such as lymph nodes, cysts, breasts and pimples indicate areas of local obstruction of the flow of blood, lymph, milk or Qi.

Although the treatment of a specific disease might be similar from one patient to another, there is considerable individualization. For instance, is a patient's fever caused by exposure to too much exopathic wind heat, or a reaction to too much exposure to exopathic wind cold? There is also considerable variation in the use of plants between doctors and between regions in China (13).

Phytotherapy is one of the means to reestablish the balance between elements. A patient with a disease caused by cold is treated with a plant that augments heat. A hot treatment may have adrenergic properties, which are manifested by an increased blood perfusion and heart rate. A cold treatment, on the contrary, may have cholinergic properties and can shunt the blood to vital organs, produce a pale complexion and slow the heart rate.

The Chumash believe that life and death are decided by the Sun and Sky Coyote, called Snilemun in Chumash (9). This is a combinatorial and dualistic philosophy, similar to the Chinese medical philosophy. Every year the Sun and Sky Coyote play a gambling game called 'peon' to decide if the year will be wet or dry. If the Sun wins, the year will be hot and dry, food and medicine will be scarce and many people will die. If Sky Coyote wins, the year will be cool and wet, food and medicine will be abundant and people will survive. The Sun is hot, dry and unforgiving to humans. Sky Coyote is beneficial to humans, and is seen in the sky as the North Star. Knowing the position of Sky Coyote in the sky helps prevent people from becoming lost. However, Sky Coyote cannot always be trusted. He is a trickster according to legends and can sometimes cause floods and other problems. The Chumash use ceremony and prayer to encourage the balance between the Sun and Sky

Coyote each year. If the proper balance is achieved, health can be maintained.

The Chumash tradition is to bathe everyday in cold water before the sun rises. However, heat is used as a remedy for disease (10). Sweat lodges are heated with fire and steam to treat sickness, especially colds, flus and pulmonary infections. Hot springs are used as baths to treat pain and illness, especially arthritis. Other heating mechanisms are also used. Plant therapy is not considered to be hot or cold.

Chumash diagnosis is very direct. The 'Antap (healer) takes a detailed history from the patient and relatives. The appearance of the patient's eyes, tongue, face and affected areas can be used in diagnosis. The 'Antap may look intently into the patient's eyes since the 'Antap's eyes are mirrors that make patients see themselves and see the truth. This is to help patients tell the truth. Prayer is an important tool used by the 'Antap in diagnosis and treatment. The 'Antap may start with helping the patient to breathe more efficiently, by having the patient sing or suck on *Salvia apiana* (white sage). Breathing keeps the body fluids moving. The 'Antap usually touches the patient to find the areas that are affected and the distant areas that may be causing the problem. For instance, if a patient complains of pain in the lower abdomen, the 'Antap may touch the back to find out if an imbalance in the back is causing pain in the abdomen. The purpose of medical treatment is to restore balance to the patient, since balance is health. A sprain resulting from too much heavy lifting may be treated with rest and casting the area with *Scirpus acutus* (tule). A cold from swimming in cold ocean water may be treated by heat treatments in the sweat lodge (1).

### Acupuncture—Healing Touch

Acupuncture consists of inserting one or more needles into specific points on the body surface for therapeutic purposes. This practice is generally believed to have originated in China, since sharpened stones and bones that date from about 8000 years ago have been interpreted as instruments for acupuncture treatment (14–17). Nonetheless, tattoo marks seen on the 'Ice Man' who died in the Alps about 5000 years ago and whose body was revealed when a glacier melted (18), might indicate that acupuncture is not purely a Chinese phenomenon, and that a form of it developed in Europe quite independently of China but later disappeared (19,20). The earliest Chinese texts to mention 'channels' (i.e. meridians) associated with diagnosis and treatment are dated around 150 BC (21,22). The earliest reference to therapeutic needling is dated 90 BC (21,22). These channels and points are not related to nerves, blood vessels or other anatomical features, although recent anatomical research indicates that acupuncture channels

follow fascia lines. Chinese believe that these meridians are energy lines that allow the flow of Qi in the body. Some experts believe that acupuncture evolved from blood letting (23,24). There are several methods and schools of thought regarding point selection: some apply needles directly to the painful site, some use distant non-painful sites and some use a combination of both sites. These points have been clinically derived over the past several 100 years. Acupressure, the application of pressure to points, has also been used in China as a means of relieving pain and treating diseases. It is clear that acupuncture can increase the release of endogenous pain relieving ligands in the body, such as enkephalins and endorphins (25). Acupuncture also relieves inflammation by decreasing cytokine expression (26).

Healing touch is used by the Chumash to comfort, cure and relieve pain (27,28). Usually, the treatment of pain involves manipulation of non-painful body areas to relieve pain in distant sites. However, painful feet are usually directly manipulated. Manipulation can involve the hands or deer antlers that are applied to sites to relieve pain. The healer individualizes therapy to make sure the patient receives the proper treatment. The treatment can be gentle or intense, depending on the patient's condition. The areas that are treated to relieve distant pain are known to the healer from experience and from training by teachers. Manipulation with deer antlers can involve the rounded or pointed parts of the antlers, and may be applied with pressure, depending on the condition of the patient. The Chumash have not devised formal channels of energy flow in the body, but recognize that a balance of power in the body is essential to health and that power is constantly decreasing (27). The Chumash realize that water flows in the body. Where the flow of water is interrupted, an area of inflammation and pain results. Healing touch is used to manipulate non-painful areas since touch produces vortices in the body water that flow like waves to help establish flow in congested areas.

Chumash view power as incorporeal, not restricted to a body or object (27). Healing power can be transmitted to an object, such as a healing rock (1). Power can be transmitted by the 'Antap through prayer and treating the rock with powdered *Eriodictyon crassifolium* (yerba santa) leaves in eel oil (1). Once the rock has been given power, the rock is wrapped in white down and can be used to heal people. By touching a sick person with the rock, the 'Antap can heal. This is the inverse of acupuncture where Qi comes from the sick person (14).

Acupuncture sometimes relies on moxibustion with *Artemisia argyi* to heat the area being treated (29). Moxibustion can sometimes result in burns. Chumash use *Artemisia douglasiana* (formerly *A. vulgaris*) as a way of cauterizing wounds (1). The plant fibers are placed on the skin and burned. This can result in large scars.

## Plant Medicines

Chinese ethnobotany is a highly structured practice, based on combining medicinal plants, minerals and animal parts according to their taste, hot or cold properties and channel-action. Plant medicine combination is based on the theory that natural medicines have complementary, synergistic and augmentative actions on each other. A Chinese traditional prescription, is a highly structured, and hierarchical formula with elements named after the political positions of ancient China, and includes a chief (king or emperor) herb, a deputy (magistrate), an assistant (adjutant) and an envoy (messenger) that collectively potentiate the therapy (11). Deputy herbs might increase the action of the chief herb or treat its unwanted effects, such as dry mouth or blurred vision.

The Chumash approach is similar, except more spiritual. *Salvia apiana* is added to almost any plant preparation in order to magnify the effects of the plant (28,30). *Salvia apiana* purifies the spirit, thereby preparing the body for healing. Plants may be combined to increase therapeutic effects, much like Chinese medicine.

Many plants used in California have Chinese equivalents. Table 1 presents 66 plants of medical value in China and California. Many plants of the same genus have similar uses in China and California. For instance, Dan Shen (*Salvia miltiorrhiza*) is a very popular Chinese medicinal plant. The plant contains tanshinones and salvianolic acids (31). A Chumash plant called chia (*Salvia columbariae*) is essentially equivalent to *S. miltiorrhiza* and contains tanshinones and a salvianolic acid (32). Both plants are used in the treatment of heart attack, stroke and other conditions in China and California.

In China, rice porridge is used for any condition involving diarrhea, such as the flu, and is definitely effective. Rice porridge is frequently the first medicine given whenever a person becomes sick. The Chumash use acorn porridge in the same way, to treat diarrhea (1). Acorn porridge is usually the first medicine given when a person becomes sick. The porridge can be made thin or thick depending on the illness. Acorns from any oak species can be used. The most popular oak acorns are from *Quercus agrifolia*, *Quercus douglasii* and *Quercus lobata* (30). The preparation of acorn porridge is discussed elsewhere (30).

Some plants of the same genus are medically valuable, but are not used for similar purposes in China and California. For instance, *Allium haematochiton* from California is used to treat bites and stings, mostly from insects. In China, *Allium sativum* is used against bacteria, cancer, and ischemia. *Iris missouriensis* in California is used against venereal diseases and pain. *Iris pallasii* in China is used against cancer.

The Chinese have imported many American plants and grow them in China for use as medicines. *Agave sisalana*,

*Asclepias curassavica*, *Cucurbita moschata*, *Datura stramonium*, *Helianthus annuus*, *Hyptis suaveolens*, *Nicotiana tabacum*, *Panax quinquefolius* and others from the American continent are now grown in China. *Papaver somniferum*, from Turkey and the Orient, is grown in the USA as a source of morphine.

## Spirits, Feng Shui and Nunasis

The Chumash recognize that each person has a spirit that is eternal and not bound to the body since it can travel to heaven (Similaqsa) after death (27). This spirit allows humans to communicate with God through a spiritual sense. Spirit is what gives humans hope, the will to do good deeds, inner strength and tranquility. The spirit is necessary for health. Sometimes the spirit forgets how to be well (30) and must be treated, usually with *Salvia apiana*, in order to purify, calm and strengthen the spirit. When the spirit is rebalanced in this way, normal health can return.

Some Chinese recognize a non-corporeal, eternal spirit in humans also (33). The spirit allows a person to recognize ultimate goals and seek self transformation. The spirit provides self reflection, values, morals and purpose. The spirit has five components such as heart spirit that is involved in propriety and the ability to communicate properly, will that is involved in destiny and wisdom, non-corporeal soul that is involved in suffering and empathy and consciousness that is involved in motivation and creativity. The spirit can be treated by some Chinese Doctors in order to help a person regain purpose, will, empathy, creativity and other virtues.

The Chumash believe in an underworld that contains spirits called nunasis (pronounced nunassus). The nunasis come out at night to create problems for people, including illness (27). The doctor must be like the owl that flies at night with keen vision to see potential danger and prevent illness. That is why the owl is a healing animal among the Chumash.

Chinese believe in ghosts, gwei in Chinese, that are never born and will never die. These ghosts come out mostly at night to cause disease and other problems for people (4,34). Feng shui (sometimes spelled feng swei) techniques are used to divert ghosts from entering houses where they might harm people.

Of course there are dangers that fly at night, such as malaria-spreading mosquitoes. Malaria is endemic to Southern China. Malaria was introduced into California in 1833, killed 20 000 Indians in California and was eradicated after the introduction of mosquito-killing DDT (30). Cold night winds can lead to exposure that may promote colds, flus, pneumonia and other diseases. Many Chinese believe that exposing the head to cold night wind will lead to illness such as arthritis.

**Table 1.** California and Chinese plant medicines—a comparison of their uses

California plant	California use	Chinese plant	Chinese use	Major chemical constituents
<i>Achillea millefolium</i>	Pain	<i>Achillea alpina</i>	Abdominal discomfort, antibacterial	Flavonoids
<i>Aesculus californica</i>	Toothaches, hemorrhoid pain	<i>Aesculus chinensis</i>	Pain, digestion, increased strength and circulation	Escins
<i>Allium haematochiton</i>	Stings and bites	<i>Allium sativum</i>	Antibacterial, anticancer, stroke and heart attack	Alliin, Allicin, ajoene
<i>Apocynum cannabinum</i>	Intestinal and lung diseases	<i>Apocynum venetum</i>	Liver disease, antihypertensive, diuretic	Glycosides, flavanols, cardenolides
<i>Aquilegia formosa</i>	Diarrhea, stomach ache	<i>Aquilegia ecalcarata</i>	Toxin elimination, muscle growth	Flavonoids, alkaloids and glycosides
<i>Artemisia douglasiana</i>	Wound cauterization	<i>Artemisia argyi</i>	Moxibustion	Monoterpenoids
<i>Astragalus purshii</i>	Menstrual pain	<i>Astragalus membranaceus</i>	Diuretic, antidiabetic, immunostimulant	Cycloartane glycosides, flavones, sitosterol
<i>Baccharis pilularis</i>	Poison oak rash, skin diseases	<i>Baccharis indica</i>	Skin diseases, stomach ache	Flavones, diterpenoids
<i>Berberis aquifolium</i>	Gonorrhea	<i>Berberis souliena</i>	Antibacterial	Berberine alkaloids
<i>Clematis ligusticifolia</i>	Sore throat, pain, colds	<i>Clematis chinensis</i>	Pain, diuretic, antibacterial	Anemonin saponins
<i>Datura wrightii</i>	Anesthesia, pain, asthma	<i>Datura metel</i>	Pain, asthma, arthritis	Scopolamine, hyoscyamine
<i>Ephedra californica</i>	Bladder infections, colds, pain	<i>Ephedra sinica</i>	Asthma, colds, headache, pain	Pseudoephedrine alkaloids
<i>Gnaphalium californicum</i>	Pain, colds, GI problems	<i>Gnaphalium affine</i>	Antitussive, expectorant, asthma	Flavonoids and diterpenoids
<i>Iris missouriensis</i>	Pain, venereal disease	<i>Iris pallasii</i>	Cancer	Iris quinone
<i>Juniperus californica</i>	Colds, fevers, constipation, pain	<i>Juniperus chinensis</i>	Digestion, circulation, arthritis	Amentoflavone, hinokiflavone, cedrol
<i>Lobelia cardinalis</i>	Pain, lung problems	<i>Lobelia chinensis</i>	Diuretic	Lobeline, lobelanine
<i>Oenothera elata</i>	Bladder and yeast infections	<i>Oenothera odorata</i>	Fevers, colds	Monoterpenes, flavonoids, sterols
<i>Opuntia littoralis</i>	Poultice for wounds, pain	<i>Opuntia dillenii</i>	Promotes circulation, diarrhea, burns	Triterpenoids, beta-sitosterol
<i>Paeonia californica</i>	Depression, lung disease, pain	<i>Paeonia lactiflora</i>	Fever, pain, liver disease	Paeoniflorin, paeonol
<i>Papaver californicum</i>	Pain	<i>Papaver somniferum</i>	Pain, diarrhea	Morphine and papaverine alkaloids
<i>Prunus ilicifolium</i>	Colds, flus, headaches	<i>Prunus armenica</i>	Pain, antitussive	Flavonoids, amygdalin
<i>Quercus lobata</i>	Diarrhea, pain	<i>Quercus acutissima</i>	Diarrhea, hemorrhoids	Starch, tannins
<i>Rhamnus californica</i>	Purging, constipation	<i>Rhamnus crenata</i>	Fever, antifungal, constipation	Antraquinone glycosides
<i>Rhus trilobata</i>	Colds, stomach ache, sores	<i>Rhus chinensis</i>	Diarrhea, GI infections, skin problems	Flavones, salicylates, tannins
<i>Rosa woodsii</i>	Diarrhea, colds	<i>Rosa laevigata</i>	Diarrhea, astringent	Vitamin C, flavonols, tannins
<i>Salix lasiolepis</i>	Fever, colds, pain, malaria	<i>Salix babylonica</i>	Goiter, tuberculosis, expectorant	Salicin, saligenin, iodine
<i>Salvia columbariae</i>	Stroke, heart attack	<i>Salvia miltiorrhiza</i>	Stroke, heart attack	Tanshinones, salvianolic acids
<i>Sambucus mexicana</i>	Colds, flus	<i>Sambucus chinensis</i>	Arthritis, edema, diarrhea, bronchitis	Flavonoids, sterols, tannins, alkaloids
<i>Scirpus acutus</i>	Casts	<i>Scirpus dichotoma</i>	Diuretic	Dihydrocyper-aquinone
<i>Solanum douglasii</i>	Anesthesia	<i>Solanum nigrum</i>	Antibacterial, diuretic	Alkaloids, steroids
<i>Stachys bullata</i>	Stomach ache, inflammation	<i>Stachys baicalensis</i>	Inflammation, bleeding disorders, diarrhea	Flavonoid glycosides
<i>Suaeda esteroa</i>	Soap	<i>Suaeda glauca</i>	Fever, blood circulation	Triterpenoids, sterols
<i>Urtica dioica</i>	Arthritis pain	<i>Urtica angustifolia</i>	Digestion, pain	Histamine, serotonin, leukotrienes

The data in this table is a compilation of published data (30,37,38).

## Philosophy of Nothing—Taoism

'My heart is sad because I have no remedy. It is only our song that is in my heart. It will always be so. There is nothing in the future. I believe in nothing.'

This beautiful song could easily be from a Chinese philosophy book. It is however, a Chumash healing song (1). Chinese Taoist philosophy teaches that excess wealth or knowledge is not good for people and may lead to disaster or illness (4). A person who possesses great knowledge, such as healing knowledge, will soon lose that knowledge. Therefore, it is best for the doctor to empty himself of knowledge and be ready to find a new remedy.

'I alone am drifting, not knowing where I am. Like a newborn baby before it learns to smile, I am alone without a place to go. Others have more than they need, but I alone have nothing.'

The quotation above is from the Tao Te Ching (35) and was written >2500 years ago by Lao Tzu, the founder of Taoism. This Chinese philosophy is very much like the philosophy of the Chumash 'Antap. The 'Antap must be a servant of the people, must be virtuous and must be spiritual. Although Chumash healers are well paid for their work, they cannot be greedy. An 'Antap proves himself with every patient. In the old days, each individual in a village was vital to the survival of the village. If an 'Antap failed to heal three patients in succession, the healer might be killed by the village leaders. When a village felt the healer had lost his ability to heal, it was time for the 'Antap to die (36).

The Chumash view of nothingness is that the 'Antap and patient must empty themselves of preconceived ideas and be ready to accept spiritual guidance in the healing process. The 'Antap creates new treatments when necessary. In order to be creative, the 'Antap must be in a detached state and must accept that his current knowledge is nothing, or useless. This allows the 'Antap to create and the patient to accept the new treatment and possible healing.

The Chinese view of nothingness is that holding onto knowledge makes the doctor lose knowledge (4). It is better for the patient and doctor to accept the disease and to approach healing without preconceived ideas. This allows the doctor to individualize therapy to better suit the patient. The doctor and patient are encouraged to be like water that flows where it must. This prepares the patient and doctor to accept the results of therapy. Of course, Chinese people used plants as medicines before Taoism was conceptualized. The Taoist approach to medicine is an old approach in China that is not as popular now as it was in the past.

## Conclusions

It is remarkable that two very divergent cultures, Chinese and Chumash, could have produced medical approaches

that are similar in some ways. There is no question that Chinese culture is based on a very strong central government and supports very large cities. Chumash culture is village based and varies somewhat from village to village. However, both Chinese and Chumash medical practices are very practical and put patient treatment and cure as the foremost objectives.

Could the Chinese have come to California in 1423 and had a direct influence on Chumash people? There are no Chumash legends about a Chinese visit. However, it is remarkable that *Artemisia* fibers are used similarly by Chinese and Chumash people. It is possible that Chumash people learned from the Chinese how to use *Artemisia* fibers. Both Chinese and Chumash people use acorns to treat diarrhea. It is possible that the Chinese learned from Chumash people how to use acorns.

Chinese medicine currently accepts western style drugs, surgery and other medical practices. In fact, main stream medicine in China is now western medicine. However, Chinese medicine retains the traditional uses of plants, acupuncture, feng shui and other practices. Chumash people also use western style medicines, surgery, hospitals and other medical practices. However, like the Chinese, Chumash people retain their use of traditional plant medicines, healing touch and other practices that have always been used by their ancestors.

There has been some criticism of traditional Chinese medicine from a scientific point of view (33). 'Is it a science? If we mean by science the relatively recent intellectual and technological development in the West, Chinese medicine is not scientific.' Chumash medicine could be criticized on the same basis. It is certainly true that Chinese traditional medicine and Chumash medicine are not limited to the narrow confines of current American scientific fads, such as knock out mice, polymerase chain reaction technology and other molecular biology techniques. Science in its basic definition is a methodology for quantitatively observing nature. Scientific observations are used to form theories that can be applied to the betterment of the human condition. Chinese medicine is clearly scientific on this basis. The Chinese have empirically and quantitatively observed patients and have formed theories that are useful in curing disease. There is no question that Chinese medicine works, since Chinese people still exist today. Chumash medicine is also a scientific approach to curing patients and returning them to productive lives. It is very fortunate that Chinese and Chumash healing have produced theories of disease causation that differ from western theories. This provides an opportunity for scientists to examine alternative approaches to disease causation and treatment that are not being currently used in western hospitals.

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## References

- Walker PL, Hudson T. *Chumash Healing Changing Health and Medical Practices in an American Indian Society*. Banning: Malki Museum Press, 1993.
- Appenzeller T. A high five from the first new world settlers? *Science* 1992;255:920–1.
- Gibbons A. Geneticists trace the DNA trail of the first Americans. *Science* 1993;259:312–3.
- Zhang D. *Key Concepts in Chinese Philosophy*. New Haven: Yale University Press, 2002.
- Unschuld P. Traditional Chinese medicine: some historical and epistemological reflections. *Social Sci Med*. 1987;24:1023–9.
- Unschuld P. *Chinese Medicine*. Boston: Paradigm Publications, 1998.
- Finlay R. How not to (re)write world history: Gavin Menzies and the Chinese discovery of America. *J World Hist* 2004;15:229–42.
- Gutmanis J. *Hawaiian Herbal Medicine kahuna la'au lapa'au*. Waipahu: Island Heritage Publishing, 1976.
- Jones TL, Klar KA. Diffusionism reconsidered: linguistic and archaeological evidence for prehistoric Polynesian contact with Southern California. *Am Antiquity* 2005;70:457–84.
- Lien EJ. Modern chemical and medical interpretations of the ancient yin yang theory. *Int J Oriental Med* 1995;20:125–31.
- Zhang E. *Clinic of Traditional Chinese Medicine (II)*. Shanghai: Publishing House of Shanghai College of Traditional Chinese Medicine, 1988.
- Kavoussi B. Chinese medicine: a cognitive and epistemological review. *Evid-base Complement Alternat Med* 2007;4:293–8.
- Unschuld PU. Traditional Chinese medicine: some historical and epistemological reflections. *Soc Sci Med* 1987;24:1023–9.
- Huang KC. *Acupuncture: the Past and the Present*. New York: Vantage, 1996.
- Ma KW. The roots and development of Chinese acupuncture: from prehistory to early 20th century. *Acupunct Med* 1992;10(Suppl):92–9.
- Basser S. Acupuncture: a history. *Sci Rev Alt Med* 1999;3:34–41.
- Chen Y. Silk scrolls: earliest literature of meridian doctrine in ancient China. *Acupunct Electrother Res* 1997;22:175–89.
- Dorfer L, Moser M, Bahr F. A medical report from the stone age? *Lancet* 1999;354:1023–5.
- White A, Ernst E. A brief history of acupuncture. *Rheumatology* 2004;43:662–3.
- Ernst E. Systematic review of systematic reviews of acupuncture. *Clin Med* 2006;6:508–9.
- Ramey D, Buell PD. A true history of acupuncture. *Focus Alt Comp Ther* 2004;9:269–73.
- Harper D. *Early Chinese Medical Literature*. The Mawangdui Manuscripts. London: Kegan Paul International, 1997.
- Imrie RH, Ramey DW, Buell PD, Ernst E, Basser SP. Veterinary acupuncture and historical scholarship: claims for the antiquity of acupuncture. *Sci Rev Alt Med* 2001;5:133–9.
- Epler D. Bloodletting in early Chinese medicine and its relation to the origin of acupuncture. *Bull Hist Med* 1980;54:357–67.
- Han JS. Acupuncture and endorphins. *Neurosci Lett* 2004;361:258–61.
- Chae Y, Hong MS, Kim GH, Hahm DH, Park HJ, Ha E, et al. Protein array analysis of cytokine levels on the action of acupuncture in carrageenan induced inflammation. *Neurol Res* 2007;29:S55–8.
- Blackburn TC. *December's Child a Book of Chumash Oral Narratives*. Berkeley: University of California Press, 1975.
- Adams JD, Garcia C. The advantages of traditional Chumash healing. *Evid-based Complement Alternat Med* 2005;2:19–23.
- Shanghai College of Traditional Medicine, translated by O'Connor J, and Bensky D. *Acupuncture a Comprehensive Text*. Chicago: Eastland Press, 1981.
- Garcia C, Adams JD. *Healing with Medicinal Plants of the West – Cultural and Scientific Basis for their use*. La Crescenta: Abedus Press, 2005.
- Adams JD, Wang R, Yang J, Lien E. Preclinical and clinical examinations of *Salvia miltiorrhiza* and tanshinones in ischemic conditions. *Chin Med* 2006;1:14–28.
- Adams JD, Wall M, Garcia C. *Salvia columbariae* contains tanshinones. *Evid-based Complement Alternat Med* 2005;2:107–10.
- Kaptchuk TJ. *The Web that has no Weaver Understanding Chinese Medicine*. Lincolnwood: NTC/Contemporary Publishing Group Inc, 2000.
- Topley M. Chinese traditional ideas and the treatment of disease: two examples from Hong Kong. *Man* 1970;5:421–37.
- Feng GF, English J. *Lao-Tzu. Tao Te Ching*. New York: Random House, 1972.
- Bean LJ. *California Indian Shamanism*. Menlo Park: Ballena Press, 1992.
- Huang KC. *The Pharmacology of Chinese Herbs*, 2nd edn. Boca Raton: CRC Press, 1999.
- Jiang Su New Medical College Faculty. *Zhong Yao Da Ci Dian*, Vol. 1–3, (Comprehensive dictionary of Chinese medicine). Hong Kong: Shanghai Scientific Technology Publishing Company, 1979.

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