

Artemisia Vulgaris and the Art of Moxibustion

by Nicholas Isabella

Botanical Description

Artemisia Vulgaris, commonly known as mugwort, felon herb, or sailor's tobacco, is the plant from which moxa is derived. It abounds on roadsides and waste areas throughout North America, Asia and Europe, and is commonly regarded as an unwanted garden weed. It adapts to a variety of soils, even adapting to city conditions where it quite often grows between sidewalk cracks.

Mugwort grows to be three or more feet in height, with angular stems that are often purplish in hue, becoming reddish or woody in appearance with maturity. The alternate leaves are up to four inches long and three inches across, becoming smaller in size and more narrow as they ascend the stems. The leaves are smooth and dark green on the upper surface and covered with a white downy fuzz beneath. The flowers are small and ovular, either reddish-brown or pale yellow in color, and are arranged in long, terminal panicles. Each flower head is 1/8 inch across or a little larger, consisting of numerous rayless florets. The root system is rhizomatous, and quite often additional plants will be generated from the root system of a mother plant. Mugwort prefers full or partial sun and moist to slightly dry conditions. This plant can spread aggressively and forms dense colonies that exclude other plants. One of the virtues of mugwort is that its presence wards off insects and rodents. Mugwort is closely related to wormwood, or *artemisia absinthium*, but may be readily distinguished by its white hairs on the undersides of the leaves and by the leaf segments being pointed and not blunt. (Grieve, 1971).

Preparation

The *Chi ai*, or *Artemisia* species, collected from Chichow in Hupei (Li Shih-Chen's birthplace) were considered to be the best. It was collected during the fifth month of the Chinese calendar and thoroughly dried. The leaves were then ground into a fine powder, which was fibrous because of the white hairs on their underside, and grayish in color. This was then exposed to strong sunlight for several days, so that the yellowish-green oil the leaves contained could evaporate. If this was not done, the moxa would burn too quickly and burn the patient. At this point, the moxa was kept in airtight containers for as long as possible, before use. The *artesiumia* tinder, which now resembled unwoven cotton, was either rolled within paper to create a cigar or formed into cones, which could be as small as a grain of rice. In Japan, they prepare moxa by heating the leaves, then rubbing them between the hands until the cottony fibers coating the underside, alone, remain. These are then made into small cones or cylinders for use. (Needham and Lu, 1980).

History of Moxa

Many historians believe the practice of moxibustion to date back to antiquity—Neolithic times. The *Shih Ching* (Book of Odes), circa 7th century BC, has a reference to the gathering of mugwort, but no indication as to its use. One of the earliest medical references occurs in the *Ming Tzu*, which dates to about 300 BC. Here, Mencius states, "...the ambitions of some of the present feudal princes to mount the throne are like a man seeking for mugwort three years old in order to cure a seven years' illness. If it has not been kept in store beforehand, the patient

may well die without ever getting it. If the princes fail to set their minds here and now on the love and service of the people, they will (far from attaining the leadership of the States) meet with sorrow and disgrace, and go down in the end to ruin and death.” (Needham and Lu, 1890, pp.175). Li Shih-Chen regarded this passage as a clear reference to the necessity of sunning, drying, and storing mugwort tinder for a long time before its application in therapy.

Perhaps, the first direct reference to moxa occurs in the *Chuang Tzu* in the chapter where Robber Chih wins a debate with Confucius on the origin of kingship, private property, and the State. Confucius is made to say, “I am like a man who has cauterized (i.e. applied moxa to) himself, without being ill at all. I never ought to have gone to talk with that fellow.” It is believed that the *Chuang Tzu* was first authored between the 2nd and 4th century BC. (Needham and Lu, pp.87-88).

Although not listed in the *Shen Nung Pen Tsao Ching* of the 2nd and 1st centuries BC, *ai* was spoken of in the *Chiu Ching* (Moxibustion Manual), a book now lost, which dates from Han times. It is also discussed in detail in another book of this era, the *Ming I Phieh Lu* (Additional Records of Famous Physicians), where it is touted as curing a multitude of diseases. This additionally gives instructions for the harvesting and preparation of mugwort and recites a number of its internal pharmaceutical actions. (Needham and Lu, 1980).

The more specialized books on moxibustion come from the Tang dynasty. One of the most notable books, the *Ku Cheng Ping Chiu Fang*, written by Tshui Chih-Thi—a high official who had a deep interest in medicine—is a treatise on the cure of tuberculosis-like diseases by moxa. It contained four diagrams and gave precise

instructions for finding the most relevant acupoints, namely Bl-17 and 19. What has come to be regarded as the first great textbook on moxibustion is the *Wai Thai Pi Yao* by Wang Thao. In it, he included only moxa and heat treatments. He spoke strongly against acupuncture, regarding needling as a dangerous practice. Sun Si-Miao, who lived around the end of Sui dynasty and the beginning of the Tang, was initially of the same opinion. As his experience grew, however, his opinion changed and, in later writings, he gave as much attention to acupuncture as to moxa.

In the Sung dynasty, more important books on moxibustion followed. The first of this period was the *Hsi Fang Tzu Ming Tang Chiu Ching* (Moxibustion Manual of the Microcosm by the Western-Direction Master), printed around 1050. It was intended as a companion to Wang Wei-l's book on the life-size bronze figure, which appeared several years earlier. Another notable book, *Kao Huang Chui Fa* (On the Moxibustion of the Kao-huang Acupoint), was written by Chuang Cho about the virtues of moxibustion at Bl-43 after being successfully treated, himself, for a variety of ailments by scarring moxibustion at this point. (Needham and Lu, 1980).

From the Southern Sung dynasty, we have the *Pei Chi Chiu Fa* (Moxibustion Methods for Use in Emergencies), written by Wenjen Chi-Nien, which dates from 1226. Along with excellent illustrations, this book deals with twenty-three diseases, including malaria, appendicitis, ulcers, boils, and some psychological ailments. Among the illustrations is a particularly good one, showing the cun module system (see Figure 1 on next page), where acupuncture points can be accurately located on different body-types using one of the patient's fingers as a standard of measurement. (Needham and Lu, 1980).



Figure 1

By 1757, when Hsu Ling Thai wrote his history of Chinese medicine, acupuncture was pretty much a lost art. There were very few experts in it and young physicians seeking training often were at a loss to find a teacher who could instruct them. Though never dying out altogether, there were a number of circumstances that led to the decline of acupuncture practice. These included lack of attention to the

recommended time treatments should be performed,

carelessness of point selection and location, and inattention to needle insertion and manipulation, resulting in ineffective, or even injurious, treatments. Moxibustion remained a more common practice, likely due to it being a less invasive therapy. There were cultural reasons for the decline of both practices as well. From the beginning of the Manchu regime, there was an upsurge of the popularity of a vulgar interpretation of Confucianism. The ultra-Confucian moralists regarded the body as sacred, bestowed upon one by one's parents. Thus, there was a built-in fear of doing "damage" to the body, as well as immodestly exposing it, as treatments would require. Women patients of this period even used little ivory statuettes to point out to the physicians the sites of their pain. The low point of the practice of moxibustion and acupuncture was reached in 1822 with an edict forbidding the teaching of these subjects in The Imperial Medical College (Thai I Yuan) because even the slightest exposure of the body was regarded as an injury to propriety and refinement. (Needham and Lu, 1980).

Ancient Practices

In the 7th century, Sun Si-Miao wrote that traveling officials generally arranged to have two or three unhealed moxa scars on their bodies. They believed that this protected them against malaria, epidemics, pestilences, and infectious ulcerating sores. In fact, there is a proverb which says, “If you wish to be safe, never allow the *Zu San Li* acupoints to become dry.” (Needham and Lu, 1980, pp.181). At this time, moxa was one of the most important components of first aid kits when people went on journeys. A common practice, which continued at least to the 17th century, was the application of moxa at three or more points on the body after each ten day period of good health. This practice was mentioned by Wu Khung-Chia in his 1640 preface to a reprint of Wang Tao’s 8th century book, *Wai Tai Pi Yao*, where he adds that “the use of three-year-old moxa tinder can ensure that no illness will follow it” (Needham and Lu, 1980, pp.181).

One of the most important points for moxibustion was written about by Chuang Cho in his famous 1128 tractate, *Kao Huang Chiu Fa* (On Moxibustion at the *Kao-huang* Acupoint). In modern times, this point is referred to as Bl-43. Chuang Cho was anxious for everyone to know the value of this acupoint, after being successfully treated for malaria and beri-beri by a man named Chen Liao-Ong. This doctor gave him three hundred moxa cauteries at the point, after which, all of his symptoms cleared up and his health was returned to normal. At the end of his book, Chuang Cho scrupulously details how to properly locate *Kao-huang* on people with various body builds, giving directions and diagrams to ensure its exact identification. (Needham and Lu, 1980).

One of the procedures for locating the *Kao-huang* point was called “*chi chu ma chiu fa*”. This entailed the setting of moxa on the back while the patient rides a “cock horse” on a bamboo pole, supported by someone on either side, illustrated in Figure 2 (Needham and Lu, 1980). The 13th century explanation for this procedure was that all circulation passes through this point. By stranding astride a bamboo pole, the coccyx is lifted, thereby allowing Qi and Blood free passage to and through this point. If blocked or overflowing, moxa—when applied to



Figure 2

this point—can adjust the current of Qi and Blood and return it to normal. When properly done, moxibustion at *Kao-huang* would make the perineal regions and external genitalia feel hot, as if steamed. The sensation of heat should descend down to the sole of the foot, namely Ki-1, and from there spread throughout the entire body. In modern terms, standing in the astride position adjusts the skin of the back in such a way as to make certain that the moxa stimulates certain posterior rami of the thoracic nerves. (Needham and Lu, 1980).

Kao-huang was first mentioned in Master Zuo-Jiu’s *Traditions of the Spring and Autumn Annals*, which dates from 580 BC. Here, there is an account of how the Prince of Jin, who was gravely ill, sent for the famous doctor, Yi Huan. After examining the prince, Dr. Huan declared that the disease had settled in the *Kao-huang* region—the region between the heart and diaphragm. Of this grave condition, he spoke, “It cannot be purged, it cannot be reached by needling, herbs

will not penetrate it, there is nothing to be done.” (Deadman, 2001, pp.303, 304). Sun Si-Miao also mentions this point in the *Thousand Ducat Formulas*. In it he states, “[With] *Kao-huang*, there is no disorder that it cannot treat.” Also, “Once moxibustion is completed, it causes a person’s *Yang-Qi* to be healthy and full.” (Deadman, 2001, pp.303, 304). Many classical texts say that BI-43 is contraindicated for needling and emphasizes treatment by moxibustion. Early texts also stress that after moxibustion at BI-43, it should also be applied to points below the umbilicus, namely Ren-6 and Ren-4, in order to conduct downwards the heat thus generated. Like its name implies, *Kao-huang*—or “vital region”—treats the deepest and most fundamental regions of the body. It is classically indicated for severe deficiency of the Lung, as would be the case with consumption, coughing of blood, steaming bone disorder, night sweating, and emaciation. The point also has a nourishing and calming effect on the Heart and is applicable in the treatment of palpitations, poor memory, insomnia, and Phlegm-Fire mania. Acting on the Kidneys, it can treat spontaneous seminal emissions—with or without dreams—and impotence. *Kao-huang* has a strengthening effect on the Middle Jiao and is thereby able to treat deficiency of the Stomach and Spleen. The tonifying action of BI-43 was so great that it was said to strengthen *Yuan-Qi* and treat every kind of deficiency. It is also particularly noted for stopping “Phlegm diseases”. (Deadman, 2001).

Another important traditional use of moxa was for the treatment of snake bites. In the *Tai-Ping Kuang Chi*, written in 978, the physician Chao Yen-Hsi is quoted as saying that if a person is bitten by a large, venomous snake, moxa should be burnt immediately upon the spot. It was thought that, if done in time, destroying the

epithelial layers of skin at the point of entry could prevent further absorption of the venom and save the patient's life. Without a doubt, this practice was also customary in Arabic and European medicine. (Needham and Lu, 1980, pp.183).

The Modern-day Practice of Moxibustion

Moxibustion has been generally regarded as the most appropriate treatment for chronic diseases, in contrast to acupuncture, which has been preferred for acute ones. The importance of the knowledge of both treatment modalities was stressed by Chin Li-Meng in his preface to the *Chen Chiu Tse Jih Pien* (On the Choice of Days and Times for Acupuncture), circa 1447. "The ancients said that a man who understands drugs but does not know acupuncture, or one who knows acupuncture but does not know moxa, can never make a real physician (*shang i*). Truly moxibustion and acupuncture are the most important of techniques." In this he echoes the opinion of most mainstream practitioners of Chinese medicine throughout the centuries. (Needham and Lu, 1980, pp.170).

Moxibustion, though generally a generic term in Chinese literature that describes any form of heat therapy, usually refers to the burning of *Artemisia Vulgaris* (or *Argyri*) tinder, or *ai*, shaped into cones and placed either directly on the skin, so as to create an eschar, or over salt, aconite, or a slice of ginger or garlic. By the 19th century, it was also rolled into cigar-like sticks and held over specific points on the body for a more mild treatment (this is known as "*ya chiu*" and is widely used today). When performing moxibustion in a treatment, the back is generally treated

first, then the front. The torso, then the extremities. (Abbate, 2002; Needham and Lu, 1980).

Ancient texts speak of curious traditions about the way in which moxa cones should be lit. Some say they were best lit from a burning glass or mirror held in the sun's rays. Alternatively, they could be ignited by taking a stalk of the actual plant, lighting it with a flame of sesame oil or candle wax, and then applying it to the moxa. Splints of pine, cypress, and other woods were not recommended. (Needham and Lu, 1980).

Moxibustion functions to warm the meridians and scatter Cold. It is very useful in eliminating Cold and Damp pathogens from the body. Moxibustion also removes obstructions and transforms stasis within the meridians, allowing them to be open and free flowing, and therefore, free of pain. It supplements Qi and Yang and is effective in treating diseases in which either is insufficient; indirectly, it tonifies blood by virtue of promoting the creation of more Qi. In such cases, acupuncture alone will not bring about a cure, since needles can only manipulate Qi that is already present in the body. The supplementing action of moxa is necessary for a cure. (Abbate, 2002).

The choice of points for moxa application generally coincided with acupoints (see Figure 3 on pp.12), though not always. Besides classical points, practitioners also frequently made use of points on the body where pain was acutely felt. These points were called "*ahshi* points". Although the practice of moxibustion was considered to require less skill than acupuncture, it was essential that it be applied at the right points on the body, a process traditionally called "*ai jung chiu*". Anciently,

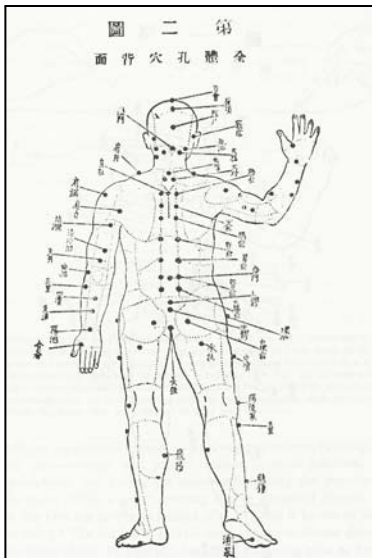
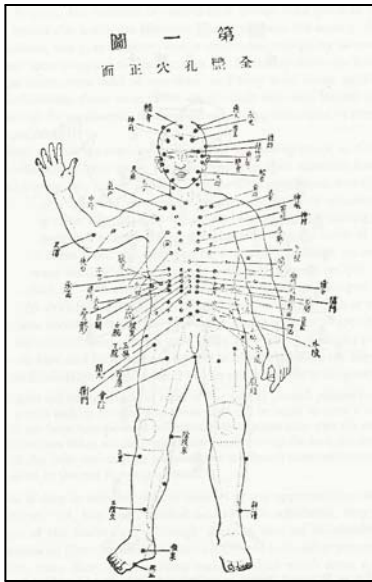


Figure 3

only one locus—either for needling or moxa—was used at time. They were never applied simultaneously. Additionally, akin to the “forbidden points” in acupuncture, there were prohibited points in moxibustion. With practice and experience, however, many of these points have come into use. One of the reasons for the initial prohibition of certain points, both in moxibustion and acupuncture, was the possibility of fainting, which was the most common side effect.

There are several contraindications for the use of moxibustion. It should not be used when there is excess Heat in the body, when the patient has come out of a sauna or hot bath within an hour or two of treatment, or if the patient is very tired, hungry, or intoxicated. Moxibustion should not be used to treat infectious diseases, acute eczema, high fever, delirium, acute hypertension, or stroke. It is also contraindicated

for use in the later stages of serious diseases such as cancer. Moxibustion should never be applied over the heart, near the eyes or ears, near major blood vessels, over the medulla, or on the genitals. With diabetics, moxibustion should be performed only on the torso and never on the extremities, where the patient may not feel how hot the area might become. The lower back and abdomen of pregnant women should also be avoided. There are some exceptions to these rules. Though

the patient may present with an Excess of some sort, if there is an underlying Deficiency, recent Chinese literature dictates that careful moxibustion can be an effective therapy. (Abbate, 2002).

There are several ways in which moxibustion can be performed. There is direct and indirect moxibustion. With direct moxibustion, loose moxa is placed directly on the skin. First there is the scarring moxa method—the method originally used in Asia—where tightly packed cones of moxa are burned down to the skin to leave a blister. An

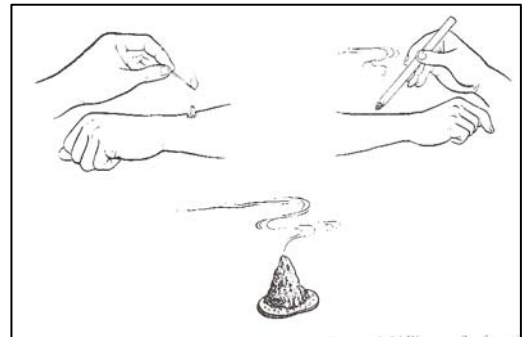


Figure 4

**Direct Moxibustion, Pole Moxibustion,
Indirect Moxibustion**

effective treatment for certain chronic and persistent conditions, this is seldomly used in the United States. Non-scarring moxa is also used for chronic and persistent conditions, usually of a digestive or respiratory nature. However, the cones—which are larger and softer than those used in the previous therapy—are removed before burning down to the skin. Another style of direct moxibustion is thread moxa, where moxa is rolled into tiny strands the size of a grain of rice. This type of moxibustion is frequently used in Japanese-style acupuncture and is used to boost Qi and open the meridians without adding heat to the body. Multiple threads must be burned in order for this to work correctly. Another type of direct moxibustion is medicinal moxa, which involves the use of moxa and other herbs, made into a paste and applied directly to the skin for various lengths of time. This is typically used in cases of arthritis or musculoskeletal pain. (Abbate, 2002).

One of the more common methods of indirect moxibustion is burning moxa on a slice of ginger. This is indicated for weakness of the Stomach and Spleen, Yang deficiency, joint pain, and abdominal pain. Moxa is also sometimes burned on slices of garlic. This is more appropriate for cases of skin infections, insect bites, and lumps in the neck glands or lymph nodes. Moxa can also be burned over salt, which is typically poured into the navel. This method is used for Yang deficiency and severe abdominal pain due to Cold and Qi deficiency; it strongly restores Yang. There is also the warm needle technique, where a cone of moxa is burned atop an acupuncture needle in the treatment of Wind-Damp-Cold Bi, flaccid paralysis, numbness, Cold stagnation in the meridians, deficiency Cold in the Stomach and Spleen, Qi stagnation, and Blood stasis. Pole moxa, where *artemisia* tinder is rolled into a cigar and held over certain areas of the body, is a commonly used method to provide gentle, harmonizing heat over a large area. However, it can be fairly strong, depending on the technique applied. Lastly, there is the rather uncommon method where moxa is burned over cakes of aconite. This method is very warming and usually used on points such as Bl-20, 21, and 23 for warming and restoring Yang to the Spleen and Kidneys. (Abbate, 2002).

Practitioners of the art of moxibustion unanimously believe that the pain produced when moxa burns down to the skin is therapeutic, leaving the subject with a deep glowing sensation (*chang kuan*, or *huai kan*) and sense of well-being analogous to the subjective experience of an acupuncture treatment. A criticism of this practice was that it caused powerful internal reactions that would throw off the

balance of Qi and Blood, which was sometimes difficult to recover. (Needham and Lu, 1980).

Experts are inclined to think that some active principle within *artemisia vulgaris* is absorbed through the skin from the burning of moxa. This active ingredient may be contained in the volatile oils of the plant. Indeed, direct moxibustion on the skin often leaves a sticky, brown resin behind. The effect of moxa cannot be reproduced by burning tobacco, wood, cotton, or similar substances, nor by application of steam heat (Needham and Lu, 1980).

The Science of Moxibustion & Modern Research

The way in which moxibustion works is by increasing blood flow to the area stimulated. In the case of treating pain, the increase of blood flow to the local area promotes the re-absorption of metabolic waste, while warming Yang and dispersing Cold or Damp. Indirect moxibustion is supposed to first constrict and then dilate the blood vessels, thereby acting as a stimulus to numb or paralyzed regions or exerting a tranquilizing effect on irritated nerve endings. When treating points distal to the area of pain or disease, moxibustion works by increasing blood flow to the treated area and normalizing blood flow to the affected area. Modern research has found that it has a salubrious affect on the immune system, lowers the effect of inflammatory factors, and increases cerebral blood flow.

The efficacy of moxa therapy was found to be contingent on the strength of moxa stimulation, by researchers at the Nanjing College of Traditional Chinese Medicine. They found that strong stimulation with moxa sticks at Zu-San-Li (St-36)

increased the activity of cholinesterase, while inhibiting hyperactive gastrointestinal motility, maintaining normal body temperature and preventing body-weight loss in rats. Better results were achieved with moxa and not by burning tobacco. (Liu, 1995).

A recent study done at the Kansai College of Oriental Medicine in Osaka, Japan discovered that morphological changes occur in the dermal blood vessels of moxibustion-stimulated rat skin. After long term stimulation with direct moxibustion at the acupoint Zu-San-Li (St-36), the researchers found that “peculiar” vessels possessing immunohistological features appeared. This data, they believe, suggests the active infiltration of blood lymphocytes into moxa-stimulated acupoints. (Yohya, Urabe, & Igarashi, 2000).

Another study done in China at the Chendu University of Traditional Chinese Medicine and Pharmacy had similar findings after direct moxibustion at Guanyuan (Ren-4) on tumor-bearing mice. Their study found that there was an increase in the decreased activity of erythrocytic immuno-accelerative factor and a reduction in the increased activity of erythrocytic immuno-suppressive factor. They concluded that moxibustion at Guanyuan can strengthen erythrocytic immunity, as well as promote its regulative function. (Wu, Cao, & Wu, 2001).

A study done at Tonji Medical University in Wuhan, China tested the effects of moxa in regulating the immune system in patients with scrofula. They found that moxibustion treatments increased the numbers of B-cell lymphocytes, while improving symptoms and either causing the swelled lymph nodes to reduce in size or return to

normality. They concluded that moxa therapy enhanced the immunological capacity of the patients treated. (Hong & Wang, 1991).

A research study performed by the Motor and Autonomic Nervous System Integration Research Group at the Tokyo Metropolitan Institute of Gerontology found that moxibustion increased cerebral blood flow in rats. Moxa stimulation was performed on various areas, including the cheek, forepaw, upper arm, chest, back, lower leg, hindpaw, and perineum. Moxibustion was performed by burning a moxa cone of about 4 mg in weight on the areas treated. They found that stimulation of the cheek, forepaw, upper arm, and hindpaw produced significant increases in cerebral blood flow. Stimulation of the other areas produced no significant responses. (Uchida, Suzuki, & Kagitani, 2003).

Researchers reporting to the World Journal of Gastroenterology found that moxibustion and acupuncture greatly inhibited the expression of inflammatory agents—namely, IL-1 and IL-6—in rats with ulcerative colitis. These results were significant because many studies have shown these inflammatory agents to play a fundamental role in the pathogenesis of ulcerative colitis, as they have been found at increased levels in the colonic mucosa and peripheral blood of patients with the disease. (Wu, Zhou, & Pan, 1999).

At the Department of Pharmacology at Showa University in Tokyo, Japan, researchers found that there was an increase in blood platelet aggregation in mice after a single moxibustion treatment. This increase was dependent on the weight of the moxa. Though blood coagulative activity tended to increase after a single moxa

treatment, multiple treatments tended to maintain the homeostasis of blood coagulation and fibrinolytic activity.(Okazaki, Sakamoto, & Suzuki, 1990).

Researchers in the Human Reproductive Division of Sao Paulo Federal University in Sao Paulo, Brazil found that acupuncture and moxa treatments on patients exhibiting seminal abnormalities, significantly increased the percentage of normal-formed sperm, compared to a control group. They concluded that using acupuncture and moxa techniques on certain acupoints can positively influence semen quality. (Gurfinkel, Cedenho, & Yamamura, 2003).

Research into moxibustion at Bl-67 for the correction of breech presentation after the thirty-third week of gestation, has found a success rate of 84.6 percent. Being a cheap, safe, simple, non-invasive, and painless technique, there is an ongoing trend toward offering this treatment as an option in breech baby cases. (Ewies & Olah, 2002). Research has shown that moxibustion for one to two weeks at Bl-67 increased fetal activity during the treatment period and cephalic presentation after the treatment period, at delivery. (Cardini & Weixin, 1998).

References

- Abbate, S. (2002). An overview of the therapeutic application of moxibustion. *Journal of Chinese Medicine*, 69, 5-11.
- Cardini, F. & Weixin, H. (1998). Moxibustion for correction of breech presentation: a randomized controlled trial. *JAMA*, 280 (18), 1580-1584.
- Deadman, P., Mazin, A.K., & Baker, K. (2001). *A manual of acupuncture*. East Sussex, England: Journal of Chinese Medicine Publishers.
- Ewies, A & Olah, K (2002). Moxibustion in breech version—a descriptive review. *Acupuncture Medicine*, 20 (1), 26-29
- Grieve, M. (1971). *A modern herbal*. New York: Dover Publications, Inc.
- Gurfinkel, E., Cedenho, A. P., Yamamura, Y., Srougi, M. (2003). Effects of acupuncture and moxa treatment in patients with semen abnormalities. *Asian Journal of Andrology*, Dec. 2003, 345-348
- Krejca, J. (1989). *Healing plants*. New York: Dorset Press.
- Liu, N. (1995). Influence of stimulating zusanli with moxibustion of different quality and quantity on gastrointestinal motor functions of reserpinized rats. [Article translated from Chinese]. *Zhen Ci Yan Jiu*, 20 (1), 48-53.
- Needham, J & Lu, G.D. (1980). *Celestial lancets: a history and rationale of acupuncture and moxa*. London: Cambridge University Press.
- Okazaki, M., Sakamoto, H., Oguchi, K. (1990). Effects of single and multiple moxibustions on activity of platelet function, blood coagulation and fibrinolysis in mice. *American Journal of Chinese Medicine*, 18 (1-2), 77-85
- Tierra, M. (1988). *Planetary herbology: an integration of western herbs into the traditional Chinese and Ayurvedic systems*. Twin Lakes, Wisconsin: Lotus Press.
- Uchida, S., Suzuki, A., Kagitani, F., Nakajima, K., Aikawa, Y. (2003). Effect of moxibustion stimulation of various skin areas on cortical cerebral blood flow in anesthetized rats. *American Journal of Chinese Medicine*, 31 (4), 611-621
- Wu, H.G., Zhou, LB., Pan, YY., Huang, C., Chen, HP., Shi, Z., Hua, XG. (1999). Study of the mechanisms of acupuncture and moxibustion treatment for ulcerative colitis rats in view of the gene expression of cytokines. *World Journal of Gastroenterology*, Dec. 5 (6), 515-517

Wu, P., Cao, Y., & Wu, J. (2001). Effects of moxa-cone moxibustion at Guanyuan on erythrocytic immunity and its regulative function in tumor-bearing mice. *Traditional Chinese Medicine*, 21 (1), 68-71.