

Ephedra Q & A

By Andrew Gaeddert, BA, AHG

Q: What's the difference between ephedra (*ma huang*) and ephedrine?

A: Ephedra refers to the whole branchlet, which is used traditionally.

It is typically made as a tea by cooking in water. Ephedrine and pseudophedrine refer to alkaloid constituents of the whole herb. Although chemically derived ephedrine is used in pharmaceutical medications, dietary supplement manufacturers are required by law to use the crude herb. Typically, an extraction is made to bring out the alkaloids when selling stimulants or weight-loss products. It is common in the weight-loss industry to combine alkaloid rich extracts with caffeine or caffeine-containing herbs such as cola and guarana, and even aspirin.

Typically, ephedra herb contains 0.5-2 percent alkaloids, including ephedrine; pseudophedrine; norephedrine; norpseudophedrine; and methylephedrine. The plant also contains flavonoids, proanthocyanidins, tannins and volatile oils. It is likely that these other constituents are buffering agents which reduce the druglike effects of the alkaloids. This supports the hypothesis that ephedra as a whole herb extract is safer than products formulated for their alkaloid content. One recommendation is to not use more than 8mg of ephedra alkaloids per dosage, and to not exceed more than 24mg in one day. If an individual took a TCM formula in pill form, it would be very difficult to consume this amount of ephedra alkaloids. However, if one took a large dosage in tea form, or a dietary supplement designed to contain the maximum alkaloid content, an individual would have to be careful not to exceed the recommended dosage.

Q: When did you first hear of ephedra?

A: I first heard of *ma huang* in the early 1980s, in a health food store in Santa Cruz. Two teenagers were hanging out and said, "Hey, Andrew -- have you tried this stuff? It works as well as speed (amphetamines). The label says to take two caps, but you have to take six to get a buzz." I looked at the black capsules and

said no thanks. On another occasion when I had to stay up to study, I took two capsules and felt pretty good; however, I started sweating. Many years later, when I was in herbal practice, a friend told me he grew up in Utah. The teenagers there picked Mormon tea (which contains ephedra) and brewed it up when they wanted a druglike experience.

Q: What are the historical usages for *ma huang*?

A: Ephedra has a history of use in China for several thousand years. One Chinese herbal formula, *ma huang tang* (ephedra decoction), traces its lineage back at least 1,800 years and is still used today for treating cold symptoms such as chills, headaches and general body aches. It is combined with cinnamon twig (*gui zhi*), apricot seed (*xing ren*) and baked licorice (*zhi gan cao*). It has been recognized since ancient times that ephedra is warming and should not be used when the body is running a high fever. In traditional Chinese medicine (TCM), it is not used as a long-term remedy. In addition it is contraindicated for weak patients and those prone to nose bleeds.

Ephedra can also be found in prescriptions for respiratory complaints. One example of this is the formula *xiao qing long tang*. In this ancient formula, *ma huang* is combined with cinnamon twig; dry ginger (*gan giang*); asarum (*xi xin*); schizandra (*wu wei zi*); peony (*bai shao* or *chi shao* - ancient texts did not discriminate); pinellia root (*ban xia*); and baked licorice. This formula is used for chills; coughing; wheezing; sputum that is difficult to expectorate; and body aches.

In the late 1800s, a Chinese scientist isolated ephedrine and pseudoephedrine, which are used in popular respiratory over-the-counter medicines and prescriptions today. It should be noted that ephedra was not a popular weight-loss ingredient until the 1980s. In other words, TCM practitioners do not use ephedra as a weight-loss ingredient, nor do ancient texts describe this use.

Q: Is *ma huang* safe? Does it have any benefits?

A: There are over 50 clinical studies on ephedra or ephedrine in which no medically serious adverse reports were reported. In fact, more than 20 studies have shown that ephedra preparations helped adults lose weight, if used as directed. Over 10 million Americans take ephedra products safely each year. On the other hand, opponents of ephedra say there have been thousands of adverse reports and a few deaths. Although this would be acceptable if ephedra was a drug, this is not considered an acceptable risk by regulatory authorities for herbs, which are regulated as food supplements. It also is important to acknowledge the intent. For

example, *ma huang* probably is less safe for those using it for weight loss, as opposed to respiratory complaints. It is also less safe for individuals taking pharmaceutical and recreational drugs, pregnant women and minors. Ephedra does have known side-effects, such as dizziness; headache; rapid or irregular heartbeat; chest pain; shortness of breath; nausea; and mood swings, and although hallucinations have been reported, it is not clear if these effects were caused by ephedra, or in combination with pharmaceutical or recreational drugs. It is not recommended for patients with heart disease; high blood pressure; thyroid disease; seizures, mental or emotional disorders; glaucoma; or those who have difficulty urinating. It may not be appropriate for diabetics.

Q: What are the current regulations?

A: *Ma huang* is legal in all 50 states, with some exceptions. In California, according to SB 1884, ephedrine alkaloids should not be sold to individuals underage 18. In addition, the product should have the following labeling:

WARNING: NOT FOR USE BY INDIVIDUALS UNDER THE AGE OF 18 YEARS. DO NOT USE IF PREGNANT OR NURSING. Consult a physician or licensed qualified health care professional before using this product if you have, or have a family history of, heart disease, thyroid disease, diabetes, high blood pressure, depression or other psychiatric condition, glaucoma, difficulty in urinating, prostate enlargement, or seizure disorder, or if you are using a monoamine oxidase inhibitor (MAOI) or any other dietary supplement, prescription drug, or over-the-counter drug containing ephedrine, pseudoephedrine, or phenylpropanolamine (ingredients found in certain allergy, asthma, cough or cold, and weight control products).

(A) Do not exceed recommended serving. Exceeding recommended serving may cause serious adverse health effects, including heart attack and stroke.

(B) Discontinue use and call a physician or licensed qualified health care professional immediately if you experience rapid heartbeat, dizziness, severe headache, shortness of breath, or other similar symptoms.

(C) KEEP OUT OF REACH OF CHILDREN.

(D) To report any adverse events, call 1-800-332-1088.

Licensed health professionals are exempt from this ruling. In addition, certain jurisdictions have banned ephedra, namely Suffolk County in New York, which has an exception clause for practitioners. Plants containing ephedrine alkaloids include Mormon tea and *sida cordifolia*, and are thus included in the

California ruling. Proposed federal regulations would put mandatory warning labels on all ephedra products regardless of whether they are sold over-the-counter or dispensed by a practitioner. Recently, California state senator Jackie Speier introduced legislation that would ban ephedra. If passed, this would make California the first state to ban ephedra.

Q: What if ephedra is administered by a trained herbalist?

A: Whole plants are almost always safer than taking the individual constituents of herbs. Unless ephedra is an aberration, it is probably safer than respiratory medications containing ephedrine or pseudoephedrine; however there does not appear to be comparison studies. Herbalists tend only to use ephedra in combination with other herbs that reduce its toxicity. There are rare cases when ephedra should be used for more than two weeks especially in warm climates. By monitoring your tongue and pulse, and symptoms a professional herbalist can determine if ephedra is appropriate and how long it should be used. As ephedra is energetically "hot"; it is rarely used in places such as California or Florida, and may be more appropriate for cold climates such as Alaska or the Northeast.

Q: What are the known drug interactions?

A: Ephedra interacts with a wide number of medications, including drugs for weight control; depression; psychiatric conditions; asthma; Parkinson's disease; high blood pressure; and respiratory or cold medications containing ephedrine or pseudoephedrine. Finally, it may reduce the effectiveness of hydrocortisone, and sedatives such as Phenobarbital. Side-effects of ephedra can be increased by taking it simultaneously with other stimulants such as caffeine.

Q: Can you speculate about the future of ephedra?

A: I have heard acupuncturists say that ephedra should only be available to licensed acupuncturists or trained herbalists. This is extremely unlikely. The only mechanism in the law would be to make ephedra available by physician prescription. This would prohibit herbalists from using ephedra as even a short-term respiratory herb. This would be unfortunate, since most medical doctors are not trained in herbs. Of particular concern are those in the holistic community who are starting to hold ephedra out as a sacrificial lamb in the belief that if they agree to have it banned, all other herbs will be exempt from regulation. On the other hand, those who have been involved in natural healing for years would argue, what's next? In other words, if the regulatory authorities succeed in banning ephedra or making it only available to physicians,

what would be the next herb to make the hit list?

Regardless of your perspective, due to liability concerns and difficulty getting insurance, most companies are in the process of discontinuing ephedra. This means it will only be available by the large ephedra diet companies that can afford the insurance premiums, and those who are willing to sell ephedra without insurance or those who are underinsured. Some companies are willing to close their business in the event of lawsuit or contact by regulatory authorities. Purchasing from such a supplier means the practitioner will be left without recourse in the event of a liability or regulatory action. It is necessary that the practitioner consider ephedra substitutes for the near future.

Q: What are substitutes for ephedra?

A: For respiratory applications, perilla (*zi su ye*), cinnamon (*gui zhi*) and schizonepeta (*jing jie*) are possible substitutes. Other substitutes include eucalyptus, ginger and tylophora.

For increasing one's energy and to help people get off ephedra and other stimulants, there is a relatively new formula that contains adrenal cortex; PAK (pyridoxal alpha ketoglutarate); pseudostellaria root (*tai zi shen*); dioscorea rhizome (*shan yao*); dolichos seed (*bian dou*); schizandra fruit (*wu wei zi*); and oryza sprout (*gu ya*). One might also consider cordyceps, which increases respiratory capacity, normalizes blood pressure, and treats fatigue.

The only true way to lose weight is to increase exercise and reduce calories. One of the hardest things about weight loss is that during the first two weeks, it is difficult, without medical fasting, to actually see the weight come off. The best use of ephedra is for helping to reduce fat storage during the first few weeks by inducing thermogenesis, i.e., burning fat. Green tea is probably the safest substitute for this application, although black tea is more popular in China. Some researchers have found high dosages of carnitine (i.e., 10 grams per day) useful for the first few weeks in attempting to lose weight. I am also excited about 5-HTP (5-hydroxytryptophan).

Researchers have found that when humans are fed a tryptophan-deficient diet, their appetite increases dramatically. A diet low in this amino acid leads to low serotonin levels. Without enough serotonin, the brain thinks it is starving. With more serotonin, the "feel good" neurotransmitter in circulation, the appetite regulation center receives signals that enough has been consumed. Dieting or eating too many carbohydrates reduces serotonin levels.

Serotonin can be built up by eating adequate protein and supplementing with 5-HTP, a natural source of tryptophan. While it has been demonstrated in well-designed trials to have an effect on weight loss, it is particularly noticeable clinically in helping clients to reduce carbohydrate cravings. General dosage is 50 mg one-half hour before meals or snacks. Higher dosages may be used as needed. Be sure to select products that have been naturally extracted from *griffonia simplicifolia*. It is not recommended to take 5-HTP with antidepressant medication without physician monitoring.

Q: Can you comment about the recent death of Baltimore Orioles pitching prospect Steve Bechler, who was only 23?

A: First of all, his death was tragic. Contributing factors toward his death included the fact that he took more than the recommended dosage; there was very little food in his system as he was using ephedra to lose weight; he was dehydrated; it was over 106° F that day; and the supplement he was taking contained caffeine and another herbal stimulant. Finally, professional athletes are known to abuse anabolic steroids and analgesics, so it is possible, although it has not been proven, that he was taking other pharmaceutical and/or recreational drugs that have not been identified at this time.

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