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Ma Huang

Ma huang is a traditional Chinese medicinal herb derived from the stems and branches of Ephedra sinica. Ephedra sinica is a plant species native to Mongolia, Russia, and northeastern China. Ma Huang’s other scientific names are Ephedra sinica. E. intermedia, E. equisetina. Ma Huang is commonly known as Ephedra, yellow horse and yellow astringent. It has been used in Chinese medicine for thousands of years.

Ephedrine-type alkaloids (ETA) are the active principles of Ma huang. Within these alkaloids, ephedrine is the most abundant, constituting between 30- 90% of the total alkaloid content. Ephedrine is a sympathomimetic amine and substituted amphetamine. It is similar in molecular structure to phenylpropanolamine, methamphetamine, and epinephrine. This product is a [stimulant](https://en.wikipedia.org/wiki/Stimulant) and has [thermogenic](https://en.wikipedia.org/wiki/Thermogenic) effects. It stimulates the brain, increases [heart rate](https://en.wikipedia.org/wiki/Heart_rate), constricting blood vessels, increasing [blood pressure](https://en.wikipedia.org/wiki/Blood_pressure), and expands bronchial tubes (making breathing easier). The thermogenic properties cause an increase in metabolism as well.

Ma Huang is available in many forms such as teas and tinctures, even in dietary supplement tablets, however this form is banned in the United States. The Ephedra sinica plant has traditionally been used to treat symptoms of bronchial asthma, nose and lung congestion, fever, colds, influenza, allergies and hives. Some off-label use of Ma Huang is for weight loss and sports enhancement. Several studies showed that ephedrine, especially when combined with caffeine, increases resting metabolic rate. Some studies in regulated and supervised environments have shown that ephedra is effective for short-term weight loss (0.9 kg/month more than the placebo.) There are no formal requirements for standardization or [quality control](https://en.wikipedia.org/wiki/Quality_control) of dietary supplements in the United States, and the dosage of effective ingredients in supplements may vary widely from brand to brand or batch to batch.

Dosages of ephedra more than 32mg/day have resulted in adverse reactions. Because of adverse events and lack of efficacy, use is not recommended for weight loss or increased athletic performance. The U.S. Food and Drug Administration banned the sale of supplements containing ephedrine alkaloids in 2004. Reported adverse reactions include arrhythmia and sudden death, myocardial infarction stroke, psychiatric symptoms, autonomic hyperactivity, seizures and ischemic colitis and gastric mucosal injury. Women who are pregnant should avoid use of Ma huang. Cardiovascular and cerebrovascular adverse events have been documented in case reports. There are no reported effects on bleeding. Interactions are likely to be similar to those established for synthetic ephedrine and include monoamine oxidase inhibitors (MAOIs) the anesthetic propofol, cholinergic agents such as tricyclic antidepressants, caffeine, theophylline, and steroids such as dexamethasone.

 A known prescription medication containing ephedrine and comparable to Ma huang is Akovaz, which is a decongestant and bronchodilator. However, Ma Huang attracts consumers for it similar various uses and over the counter availability. Consumers may think because Ma Huang is non prescription and plant based that serious side effects cannot occur. As healthcare professionals we must be knowledgeable about natural products as well, so we can educate our patients about their interactions and serious side effects. We can verify our sources from reputable websites and confirm the research done on the product. If I had a patient that is taking Ma Huang, I would be concerned about the serious side effects and interactions when combined with other sympathomimetic drugs. For patients taking Ma Huang it is best to use vasoconstrictors with caution since ephedrine may enhance cardio stimulation and vasopressor effects of sympathomimetics, such as epinephrine and levonordefrin.

References

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