Ephedra

Profile

Ephedra (Ephedra sinica), also known as Ma-Huang, is an herbal stimulant drug composed of two active compounds (pseudoephedrine and ephedrine) that are ingredients in many over-the-counter products. The FDA regulates ephedrine, the synthesized form of ephedra. Ephedrine can be produced by chemical synthesis and in its pure form (ephedrine sulfate) is a bitter tasting, white, crystalline powder. Ephedrine and pseudoephedrine stimulate the opening of air passages in the lungs and are used as decongestants for the short-term treatment of asthma, bronchitis, and certain allergic reactions. Ephedrine and pseudoephedrine are also used in dietary supplements that claim to promote weight loss and enhance athletic performance.[1] The active compounds are structurally related to amphetamines; they play similar, although less potent, roles in stimulating the central nervous system. Ephedrine is often the primary ingredient found in illegally synthesized drugs, including methamphetamines.[2]

History

Traditionally, the Chinese have used ephedra to treat asthma and other respiratory problems.[3] Although ephedra is presumed "safe" under the Dietary Supplement Health and Education Act of 1994, the International Olympic Committee, the National Football League, the National Collegiate Athletic Association, and the U.S. Armed Forces have banned products containing ephedra. The controversy over whether ephedra-containing products effectively and safely promote weight loss and improve athletic performance is ongoing.[4] Recently, ephedra was associated with the death of Baltimore Orioles pitcher, Steve Bechler, who died of a heatstroke in February 2003. His death readdressed national attention to the dangers of ephedra.[5]

Ephedra grass is grown and cultivated in many parts of China and India on government-owned farms. China is the world's largest exporter of bulk ephedrine.[6] Due to its dangerous effects, the FDA has placed many restrictions on the production of ephedra. Warnings are required on supplement pill labels, cautioning that the product should not be used consistently for more than seven days.

Methods of Use

Ephedra is usually taken orally. A common adult dosage ranges from 30 to 60 mg in a capsule or tablet, 3 to 4 times a day. In low doses, ephedrine is used in the form of nose drops as a nasal decongestant.[7] Ephedra has been found to be used in one protein drink on the market, commonly referred to as *Ripped Fuel*.[8]

Physical Effects[9]

- Headaches
- Dizziness
- Nausea and vomiting

- Insomnia
- A “boost” in energy
- Sweating
- Increased heart rate and blood pressure
- Stroke
- Seizures
- Heart attack
- Possible death

Psychological Effects[10]

- Confusion
- Hallucinations
- Psychosis
- Nervousness, agitation, or restlessness

Tolerance

With regular use, an individual can develop tolerance to ephedrine, requiring users to take larger doses to achieve the same effect. Temporary abstinence from ephedrine can restore an individual’s sensitivity to the drug.[11]

Terminology[12]

- Ephedra-containing products are legally marketed under some of these terms:

  Black Beauties
  Yellow Jackets
  Ripped Fuel (protein drink)
  Natural Ecstasy

Links

- Drug Early Warning System: Ephedrine
- DEA: Drug Intelligence Brief: China Country Brief
- FDA: Evidence on the Safety and Effectiveness of Ephedra: Implications for Regulation

Footnotes

[1] RAND Health. (2003). “Ephedra – Is It Worth the Risk?” Retrieved October 18, 2006, from http://www.rand.org/pubs/research_briefs/RB4556/index1.html.
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[3] Brands, B., Sproule, B., Marshman, J. (1998); RAND Health (2003); Theoharides, T.C. (1997). Sudden Death of a Healthy College Student Related to Ephedrine Toxicity from a Ma Huang-Containing Drink. Journal of Clinical Psychopharmacology, 17(5), 437-8.
[4] Torpy, J.M. (2003).
[5] Brands, B., Sproule, B., Marshman, J. (1998); Torpy, J.M. (2003); Shekelle, P.G., Hardy, M.L, Morton, S.C., Maglione, M., Mojica, W.A., Suttor, M.J., Rhodes, S.L., Jingling, L., and Gagne, J. (2003, March). Efficacy and Safety of Ephedra and Ephedrine for Weight Loss and Athletic Performance: A Meta-analysis. JAMA, 289 (12): 1537-1545.
[6] FDA (2003).
[7] CBC News. (1999, November 16). "Popular Weight Loss Ingredient Has Caused Some Serious Health Problems." Retrieved October 18, 2006, from http://www.cbc.ca/consumers/market/files/health/ephedrine/index.html; Cox, Jacobs, Marshman, Fehr. (1987). Drugs & Drug Abuse (2nd edition).
[8] Brands, B., Sproule, B., Marshman, J. (1998).
[9] Theoharides, T.C. (1997).
[10] Brands B., Sproule, B., Marshman, J. (1998); Torpy, J.M. (2003). Brands B., Sproule, B., Marshman, J. (1998); Torpy, J.M. (2003); National Institutes of Health (2003); Theoharides, T.C. (1997).
[11] Brands B., Sproule, B., Marshman, J. (1998).
[12] FDA: FDA News: FDA Acts Against Potentially Risky Products Illegally Marketed as Street Drug Alternatives. (2003, March): http://www.fda.gov/bbs/topics/NEWS/2003/NEW00889.html ; Theoharides, T.C. (1997).