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## Adicción a la efedrina en los trastornos psiquiátricos

## Addiction to ephedrine in psychiatric disorders

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**E**phedra comes from the Ephedraceae family of plants. *Ephedra sinica*, *Ephedra equisetina* and *Ephedra intermedia*, collectively known by their Chinese name ma huang, are indigenous to Pakistan, China, and northwestern India (White et al., 1997). For centuries, the dried stems of these plants have been used for medicinal purposes though this herbal remedy has generated a whirlwind of debate since the mid-1990s, when some of its users became seriously ill.

Ephedrine, a chemical contained in the ephedra herb and its active component, is used therapeutically as a nasal decongestant, with properties similar to epinephrine resembling the effect of amphetamines. In traditional Asian medicines, ephedra-based products are sometimes used as bronchodilators. However in many countries, it is also sold as over-the-counter supplements to improve athletic performance, enhance weight loss and promote bodybuilding. In fact, many of these products often contain other stimulants, such as caffeine, which may have synergistic effects and increase the potential for adverse effects.

Many side effects have been reported with the use of ephedrine. Minor side effects such as tremors, palpitations, headache, restlessness, anxiety or insomnia and major side

effects such as seizures, severe hypertension, arrhythmias, psychosis, hepatitis, stroke, myocardial injury, intracranial haemorrhage or death have been described. These side effects often run parallel to the dose and time consumption, especially in patients with over-the-counter availability or unrestrained self-medication. However, the adverse effects do not always depend on the dose consumed, as serious problems can occur in susceptible persons with use of low dosages. Therefore, products containing ephedrine are not to be used by people with heart disease, hypertension, diabetes, thyroid disease, enlarged prostate, anxiety, glaucoma, under monoamine oxidase inhibitors treatment or women who are pregnant or lactating (Wooltorton et al., 2002).

On February 11, 2004, The Food and Drug Administration (FDA) published a regulation declaring dietary supplements containing ephedrine alkaloids adulterated because they present an unreasonable risk of illness or injury under the conditions of use recommended or suggested in labeling. This action was taken based upon the well-known pharmacology of ephedrine alkaloids, the peer-reviewed scientific literature on the effects of ephedrine alkaloids, and the adverse events reported to have occurred in individuals following consumption of dietary supplements containing ephedrine alkaloids.

We have previously reported the case of an agoraphobic patient with panic attacks that developed myocardial necrosis and severe biventricular dysfunction in the context of chronic ephedrine abuse (Martínez-Quintana et al., 2010). The patient took this product to enhance his energy and feel better, presenting withdrawal symptoms when he stopped taking it. Tough after 10 years of monitoring, the patient is currently in a II/IV New York Heart Association functional class with no new drug addictions, we want to emphasize the importance of the addictiveness of certain drugs or dietary supplements with ephedra compound in psychiatric patients.

Drug abuse addictions and psychiatric disorders often occur at the same time. In fact, certain mental conditions such as depression, bipolar disorders, anxiety, anorexia, schizophrenia or agoraphobia are frequently associated with drug dependency. Psychiatric illnesses make these patients more vulnerable, less inhibited and more likely to show risk-taking behaviour – like buying and using illegal drugs or dietary supplements marketed as "legal" drugs – that could quickly lead to drug abuse. In fact, fifty percent of those with an addictive disorder will have a psychiatric disorder and for those who have a psychiatric disorder, about 20 percent have an addiction problem. In patients with ephedra addiction, psychiatric complications generally result in affective disturbances, psychosis, mania, and a subjective sense of welfare (Miller et al., 2003) and although psychosis was found to be the most frequent psychiatric adverse event reported in the review of the database of FDA (Miller, 2005), other authors offer that ephedra abuse, and sometimes dependence, is a more frequent occurrence in society (Maglione et al., 2005).

In relation to weight loss, initially, it was attributed solely to the appetite-suppressing effects of ephedrine. However, other mechanisms have been suggested because ephedrine and combined ephedrine and caffeine have been observed to partially prevent the usual fall in resting metabolic rate during a calorie-restricted diet. However, the higher metabolic rates observed was not always associated with weight loss (Astrup et al. 1992). In this context, Shekelle et al. (2003) reported that ephedrine and ephedra promote modest short-term weight loss in clinical trials, existing no data regarding long-term weight loss, and evidence to support use of ephedra for athletic performance is insufficient.

Because over-the-counter availability and unrestrained self-medication with products containing ephedra create a heightened potential for serious side effects we should be aware of those patients who take herbs or supplements to lose weight, improve athletic performance, especially if they have a psychiatric disorder background.

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