

Supplement Performance

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Bodybuilding Supplement Update

"I subscribe to about 15 different magazines from Barron's to National Geographic to Muscular Development. The one magazine that is regularly stolen by the Postal Service is Muscular Development." Anonymous, T-mag.com message board

Are Adverse Effects of Ephedra Exaggerated?

Ephedrine is classified as a sympathomimetic drug and central nervous system stimulant. Its ability to act as a sympathetic agonist and increase thermogenesis (production of heat) has led to its use in weight loss/fat loss. In most dietary supplements, ephedrine used to appear as an extract from one of two herbs: ephedra or *Ma huang*.

Although the ephedra species have a long tradition of use (more than 5,000 years) for respiratory ailments, the U.S. Food and Drug Administration (FDA) recently decided to ban ephedra-containing supplements. The pharmacokinetics of ephedrine following ingestion of supplements formulated as concentrated ephedra extracts is distinguishable from that of synthetic ephedrine found in conventional dosage forms. Nevertheless, the FDA didn't ban ephedrine.

Ephedrine has also been coupled with both caffeine and aspirin to further enhance its effectiveness (i.e., ECA). Ephedrine stimulates the release of norepinephrine (noradrenaline), which in turn stimulates the synthesis of prostaglandins by the activated tissues. Aspirin inhibits the synthesis of prostaglandins and serves as a prostaglandin blocker and thereby may prevent inhibition of norepinephrine release.

In addition, ephedrine is used as a performance-enhancing substance (ergogenic aid). For example, Dr. Jacobs and co-workers reported that ephedrine ingestion, either alone or in combination with caffeine, can lead to a significant increase in the number of repetitions that can be performed and the total amount of weight that can be lifted during weight training. In fact, the magnitude of the ergogenic effect is highly significant for gym rats since only 90 minutes after ingesting caffeine plus ephedrine, a 16 percent improvement in bench press performance was reported.

Is Ephedra Toxic?

In a comprehensive study by Drs. Blechman and colleagues at the New York School of Medicine and City and County of San Francisco Hall of Justice, the investigators reviewed all autopsies in their medical examiners' jurisdictions, from 1994 to 2001, where ephedrine or any of its isomers were detected. Toxicology testing results were tabulated and anatomic findings in ephedra cases were compared to those in a control group of drug-free trauma victims.

Of 127 ephedra cases identified, 33 were due to trauma, i.e., an injury caused by an extrinsic (outside of a body) agent. Furthermore, more than 88 percent (113/127) of the decedents also tested positive for other drugs, the most common being cocaine and morphine. The authors stated, "What is most surprising about the results of this study is that of the cases where only ephedrine alkaloids were detected, only one possible case of ephedrine toxicity occurred in San Francisco from 1994 to mid-1999. This data contradicts the recent well-publicized case reports suggesting that large numbers of ephedrine-related deaths were occurring and that only a fraction are being reported to the FDA." Based on this study, one could conclude that the adverse effects of ephedra are greatly exaggerated.

Ephedra and Adverse Clinical Events

Some feel that ephedra may pose significant risk. Dr. Andrews and co-workers at the Beth Israel Medical Center reviewed the available literature and concluded that more stringent oversight by regulatory authorities is required to minimize the incidence of adverse events. However, the authors rightly stated that, "No clinical trial has reported major adverse cardiovascular events (stroke, myocardial infarction, or malignant arrhythmias) associated with the use of ephedra alkaloids for weight loss."

They also cited numerous case reports purportedly showing that adverse cardiovascular and cerebrovascular effects, including stroke, myocardial infarction and sudden death, are related to ephedra use. Many of these case reports are very dubious and some of them had nothing to do with ephedra products.

For example, Dr. Andrews et al. stated, "Myocardial ischemia has also been reported when ephedra alkaloids are combined with other medications that cause increased adrenergic tone, such as bupropion," citing the case report by Dr. Pedersen et al. (My reference [4]). In reality, the patient's medication history revealed recent commencement of bupropion (Zyban®) for smoking cessation and pseudoephedrine as a non-prescription influenza remedy.

Finally, based on the fact that synephrine shares a structural similarity with ephedra alkaloids, the authors speculated it may thus pose the same risks to consumers as its banned cousins. However, no evidence was provided to support this notion and the authors ignored the study by Dr. Penzak and co-colleagues, which determined cardiovascular effects of synephrine and octopamine in normotensive humans. The results indicated that hemodynamics (heart rate; systolic, diastolic and mean arterial pressure) didn't differ between water and *Citrus aurantium* juice groups (*Citrus aurantium* contains synephrine and octopamine).

Questionable Study

Numerous well-controlled clinical studies have shown that the ephedrine-caffeine combo has little, if any, effect on blood pressure when used as directed. Surprisingly, there's a recent study showing that a single dose of ephedra-guarana supplement can produce significant increases in blood pressure and resting heart rate in healthy young adults. However, I believe this is a fake report. You see, the first and third authors of this paper have served as "expert witnesses" in litigation involving manufacturers of dietary supplements that contain ephedra. These authors are outspoken critics of ephedra supplements and they just happen to be the authors of the *only* published study purportedly showing that a *single* dose of ephedra-guarana (taken in recommended doses) can produce significant cardiovascular and metabolic changes. Call me a skeptic, but this paper smells like bullshit. By the way, some 20 percent of patients have blood pressures that are significantly higher in the doctor's office than at home ("white coat hypertension") simply because emotions increase the cardiac output and peripheral resistance and thus arterial pressure.

So, what's the bottom line? Ephedrine-caffeine supplementation promotes fat loss, improves exercise performance and is relatively safe when used as directed. However, ephedrine/ephedra isn't for everyone and must be used responsibly. It's very important that you read product labels, warnings and cautions and follow the directions.

Forskolin Cuts Fat and Increases Free T

Some practitioners of traditional Ayurvedic medicine have long used the herb *Coleus forskohlii* to treat asthma, heart disease and a range of other ailments. In the 1970s, scientists isolated a chemically active ingredient in the herb and called it forskolin. Now available in supplement form, this extract is commonly recommended for treating hypothyroidism, a condition in which the thyroid gland produces too little thyroid hormone. It has also been suggested that forskolin can:

- Increase the force of contractions of the heart muscle.
- Relax arteries and other smooth muscles.
- Increase lipolysis (the breakdown of storage fat).

A recent study by Dr. Godard and co-workers at the University of Kansas examined the effects of forskolin on body composition, testosterone, metabolic rate and blood pressure in overweight and obese men. Thirty subjects were studied for 12 weeks in this randomized, double-blind, placebo-controlled study. The results indicated that forskolin supplementation (250 milligrams of 10 percent forskolin extract twice a day) significantly decreased body fat percentage and fat mass while concurrently increasing bone mass. Furthermore, the investigators noted that there was a trend toward a significant increase for lean body mass in the forskolin group. Interestingly, forskolin also increased free (biologically active) testosterone levels. In summary, this product may be a useful supplement for gym rats, but well-controlled studies in healthy athletes are needed before firm conclusions can be drawn.

KIC + HMB Decreases Exercise-Induced Muscle Damage

A recent study by Dr. van Somerne and colleagues examined the effects of beta-hydroxy-beta-methylbutyrate (HMB) and alpha-ketoglutaric acid (KIC) supplementation on signs and symptoms of exercise-induced muscle damage following a single bout of eccentrically biased resistance exercise (muscular damage and soreness occurs more readily following eccentric exercise than following concentric exercise). Subjects were assigned to an HMB+KIC (three grams of HMB+0.3 grams of KIC daily) or placebo treatment for 14 days prior to exercise. Simply stated, the investigators reported that HMB+KIC supplementation reduces signs and symptoms of exercise-induced muscle damage in non-resistance trained males. Whether HMB+KIC has similar effects in well-trained athletes remains to be determined.

HCA Preparations Exert Striking Differences in Efficacy

Hydroxycitric acid (HCA) is otherwise known as *Garcinia cambogia* and derives from the dried rind of the *Garcinia cambogia* fruit. HCA is a popular ingredient in commercial weight-loss preparations, but studies on its fat-loss enhancing effects are controversial. In a recent study by Drs. van der Haar and co-workers, published in *Nutrition & Metabolism*, the effects of three different HCA-containing preparations (Regulator, Citrin K, CitriMax[®]) on food intake and bodyweight were studied in rats. The conclusion was that these commercially available HCA preparations exert striking differences in efficacy in inhibiting voluntary food intake in rats. Specifically, Regulator and Citrin were potent suppressants of food intake, whereas CitriMax[®] exerted much smaller effects on food intake.

References

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