

CURRENT TOPICS IN NUTRACEUTICAL RESEARCH

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Current Topics in Nutraceutical Research 8 (1): 1-6

- 1-6 EFFICACY OF NUTRITIONAL ERGOGENIC AIDS IN HOT ENVIRONMENTS
Brett R. Ely and Samuel N. Cheuvront [ABSTRACT]

ABSTRACT: *Many athletes seeking a competitive edge rely on nutritional ergogenic aids to improve performance. Carbohydrate (CHO) and caffeine (CAF) supplementation appear efficacious at enhancing endurance exercise performance when studied under ideal circumstances, but the unique challenges imposed by environmental stressors such as heat may minimize or negate these effects. Similar to findings in temperate or cool environments, CHO intake during endurance exercise in hot environments produces a consistent performance benefit. But in contrast to the benefits observed in moderate environments, CAF affords no apparent performance advantage in the heat. These findings raise interesting questions about nutritional ergogenic mechanisms of action and offer direction for future research.*

Current Topics in Nutraceutical Research 8 (1): 7-18

- 7-18 ACUTE PROTEIN-CARBOHYDRATE SUPPLEMENTATION: EFFECTS ON EXERCISE-INDUCED MUSCLE DAMAGE
Emma Cockburn [ABSTRACT]

ABSTRACT: *In recent years, research investigating strategies to reduce exercise-induced muscle damage have become popular, with acute carbohydrate-protein supplementation gaining interest. The results of these studies are equivocal. A review of published peer-reviewed articles in reference to acute carbohydrate-protein supplementation and their impact on alleviating exercise-induced muscle damage is provided, in addition to an overview of the exercise-induced muscle damage process and rationale for their use. It can be concluded that there is potential for acute carbohydrate-protein supplementation to reduce some symptoms of exercise-induced muscle damage. Primarily, there is evidence of reduced increases in intramuscular proteins in serum and attenuated reductions in concentric muscle actions. However, there is little evidence of muscle soreness being alleviated. There are also substantial gaps in the literature, with information lacking in: (i) optimal dosage; (ii) optimal timing of supplementation; (iii) the effect on all paradigms of muscle function; and (iv) make-up of supplement(s), although whey protein concentrate and milk-based protein appear to provide benefits. Due to the conflicting results and the lack of studies conducted in this area it is difficult to provide definitive advice to the exercising individual. However, consuming carbohydrate-protein supplements would be recommended as they have demonstrated potential for reducing exercise-induced muscle damage and may be beneficial for other aspects of recovery.*

Current Topics in Nutraceutical Research 8 (1): 19-32

- 19-32 CREATINE AND β -ALANINE SUPPLEMENTATION IN STRENGTH/POWER ATHLETES
Jay R. Hoffman [ABSTRACT]

ABSTRACT: *Creatine and β -alanine are two of the most popular sport supplements used by strength/power athletes today. The popularity of creatine has resulted in more than 600 studies examining the physiology, efficacy and safety of its use among various athletic populations. Recently, β -alanine has become as popular a supplement for the anaerobic athlete due to its unique ability to enhance muscle buffering capacity. This review will examine the studies that have been conducted on the efficacy of these supplements. In addition, the physiology that underlies the mechanisms of action behind these supplements will be described and provide an understanding to the potential ergogenic benefits that they hold for strength and power athletes. Finally, discussion will also examine the potential adverse effects associated with each supplement.*

Current Topics in Nutraceutical Research 8 (1): 33-44

- 33-44 QUERCETIN'S BIOACTIVE EFFECTS IN HUMAN ATHLETES
David C. Nieman [ABSTRACT]

ABSTRACT: *Quercetin exerts strong anti-oxidative, anti-inflammatory, anti-pathogenic, and immune regulatory effects in vitro and in animal-based studies. Epidemiologic data indicate reduced rates of cardiovascular disease and various types of cancer in groups self-selecting diets high in quercetin. Several recent quercetin supplementation studies in human athletes have focused on potential influences as a countermeasure to post-exercise inflammation, oxidative stress, and immune dysfunction, in improving endurance performance, and in reducing illness rates following periods of physiologic stress. When quercetin supplementation is combined with other polyphenols and food components such as green tea extract, isoquercetin, and fish oil, a substantial reduction in exercise-induced inflammation and oxidative stress occurs in athletes, with chronic augmentation of innate immune function. Quercetin supplementation (1,000 mg/day for two to three weeks) also reduces illness rates in exercise-stressed athletes. Animal studies support a role for quercetin as an exercise mimetic for mitochondrial biogenesis, and recent data in untrained human subjects indicate modest enhancement in skeletal muscle mitochondrial density and endurance performance. Quercetin has multiple bioactive effects that support athletic endeavor, and research continues to better define optimal dosing regimens and adjuvants that amplify these influences.*

Current Topics in Nutraceutical Research 8 (1): 45-54

45-54 **DIETARY SUPPLEMENTATION WITH PECANS DELAYS MOTOR NEURON PATHOLOGY IN TRANSGENIC MICE EXPRESSING G93A MUTANT HUMAN SUPEROXIDE DISMUTASE-1**

James Suchy, Sangmook Lee, Ambar Ahmed, and Thomas B. Shea
[ABSTRACT]

ABSTRACT: *A growing body of evidence indicates that diet can modulate health in aging to the extent of delaying the manifestation of age-related diseases. Nuts are among the antioxidant-rich foods that have been demonstrated to provide a degree of protection against age-related disorders. We examined herein whether or not dietary supplementation with pecans could affect the course of pathology in a mouse model of the age-related human motor neuron disorder amyotrophic lateral sclerosis (ALS). Transgenic mice expressing the G93A mutation of human superoxide dismutase-1 SOD-1 have been widely utilized to study the onset and progression of familial ALS. Mice provided a diet supplemented with 0.05% pecans displayed a significant delay in decline in motor neuron function, which was accompanied by increased survival of motor neurons and a decrease in reactive gliosis, as compared to non-supplemented mice. These findings support inclusion of pecans and/or other nuts as part of a comprehensive nutritional therapeutic approach that may augment pharmacological approaches.*