

L-arginine: Supplement tested on fit, athletic men shows no advantage

November 22 2011

One of the most recent, popular supplements for athletes looking to boost performance comes in the form of a naturally-occurring amino acid called L-arginine.

The reason for its [popularity](#) is twofold says Scott Forbes, a doctoral student in [exercise physiology](#). "First, L-arginine is a [precursor](#) for [nitric oxide](#) that is known to improve blood flow, which in turn may aid the delivery of important [nutrients](#) to working muscles and assist with metabolic waste product removal. Secondly, L-arginine has been shown to increase growth hormone levels in the blood."

The benefits of growth hormone are diverse, including increasing the use of fat as a fuel as well as insulin and insulin-growth factor-1 (IGF-1) levels. However, most of the research conducted on L-arginine has been in a clinical setting and the benefits for physically active individuals are not as established. In some cases they are conflicting.

"One of the reasons for this is that the amount an individual has to consume has not been clearly established and this information is rarely provided by the manufacturers of such products," explains Forbes, a doctoral student in exercise physiology.

For Forbes it was a theory worth testing – and he wanted to test two different L-arginine doses on healthy, athletic men – the group most likely to purchase this readily-available supplement.

"L-arginine is interesting for a few reasons," says Forbes. "It can increase growth hormone response, and so can increase [muscle](#) mass. Also it has an impact on insulin, which is another anabolic hormone. A recent hot topic has been about nitric oxide as a vasodilator. The theory is that if you can vasodilate your arteries you can potentially enhance [blood flow](#) to the muscles and enhance nutrient delivery and waste product removal."

L-arginine is also often prescribed for older adults with cardiovascular disease, endothelial dysfunction or hypertension for its vasodilation properties and is rarely studied in younger, more vigorous populations.

For this study, Forbes recruited 14, active, physically fit men (age: 25 ± 5 yrs; weight: 78.0 ± 8.5 kg; height: 179.4 ± 4.7 cm), who were free of nutritional [supplements](#), to examine a low and high dose of oral L-arginine on blood L-arginine, markers of nitric oxide, growth hormone, insulin, and insulin-like growth factor-1. In the double-blind, randomized, placebo-controlled study participants were first pre-screened, completing a one-day food record which was analyzed for carbohydrates, protein and fat consumption and caloric intake, then required to follow a modified diet to regulate intake of food and water prior to being dosed with L-arginine.

"After a 10-hour overnight fast, and no breakfast, we gave them a different dose of L-arginine – either .075 g per kilogram of body mass for the low dose, .15 g per kg of body mass for the high dose, or a placebo," says Forbes.

Blood samples were drawn with the athlete at rest, every half hour for three hours after the L-arginine or placebo dose. The reason explains Forbes, is that "Previous studies show that two hours after consumption L-arginine tends to reach baseline again."

What Forbes found was that in healthy, young, physically active males the two different doses significantly elevated L-arginine concentrations in the blood at rest, and both a low dose and a high dose were equally effective in doing so, but neither dose promoted a significant increase in nitric oxide, [growth hormone](#), insulin, or insulin-like growth factor-1.

So, according to the study, it appears that L-arginine's impact depends on one's current health status: the more healthy and athletic the person, the less they'll benefit from it.

Now that he's established how L-arginine impacts the fit, young body at rest, he's embarked on two more studies – one with strength-trained athletes and one with aerobically-trained athletes – cyclists in this case – to look at the impacts of L-arginine on the body during exercise. "This time we're looking at the effects of supplements under two extremes: aerobic and strength exercise.

"There's a lot of money in nutritional supplements," he adds. "The industry might not be too happy when they see the results at rest, but who knows, it may be different with exercise."

Forbes has completed both of the exercise studies and hopes to publish the results in the near future.

Provided by University of Alberta

Citation: L-arginine: Supplement tested on fit, athletic men shows no advantage (2011, November 22) retrieved 27 April 2024 from <https://medicalxpress.com/news/2011-11-l-arginine-supplement-athletic-men-advantage.html>

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