

Beta-Alanine

B-Ala | B-alanine | B-aminopropionic Acid

Introduction

Beta-alanine is often heralded as one of the ultimate sports supplements, namely for its ability to boost performance and endurance during high intensity movements such as weightlifting, sprinting, or long-distance running. It does so by increasing muscle carnosine levels, which reduces muscle acidity and delays the onset of muscle fatigue. Further, carnosine shows promise for enhancing cognition and brain health. Carnosine acts as an antioxidant and may even boast anti-aging properties (3).

What Exactly is Beta-Alanine

Beta-alanine is a naturally occurring non-essential amino acid that our bodies produce endogenously, and so it isn't essential that we get it from the diet to support general health. Having said that, additional supplementation has been shown to enhance physical performance during high intensity exercise (1). This, especially regarding bouts of high intensity exercise lasting from 1-10 minutes (3). Majorly known as a moiety in carnosine formation, and for reducing muscle fatigue, chemically; beta-alanine is a naturally occurring beta-amino acid comprising propionic acid with the amino group in the 3 position. It plays a role as an inhibitor, an agonist, a fundamental metabolite, and a neurotransmitter (4). Beta-alanine contributes to the formation of carnosine, a dipeptide consisting of the amino acids: beta-alanine and histidine. Carnosine has been shown to improve muscle endurance during moderate-high intensity exercise by acting as a buffer which reduces acidity in the muscles (5).

Cognitive Benefits

Beta-alanine supplementation may improve cognition, while mitigating symptoms of anxiety and depression associated with aging, neurological disorders, and physical exertion. Such an effect has been attributed to its ability to increase levels of brain carnosine and/or brain-derived neurotrophic factor (BDNF) (6,7). BDNF is like "fertilizer" for your brain and promotes the growth, maturation, maintenance, and survival of neurons. Hence, beta-alanine may improve neural plasticity, learning, memory, focus, alertness, and overall cognition. Fascinatingly, beta-alanine has even been shown to improve cognitive deficits associated with traumatic brain injury. One study showed that beta-alanine supplementation for 30-days increased resiliency to mild traumatic brain injury (mTBI) in animals exposed to a low-pressure blast wave, where the prevalence of mTBI-like behavior was significantly lower in the beta-alanine group compared to the control group (8).

Ergogenic benefits

Regarding enhanced physical performance, beta-alanine has more specifically been shown to improve performance and endurance during moderate-to-high intensity cardiovascular exercise, during say, a super set or sprinting session. Chronic beta-alanine supplementation enhances high intensity interval training (HIIT) and supports lean body mass (9). Albeit it's been shown to be especially effective for high intensity exercise lasting 10 minutes or less, it also shows promise for supporting endurance. Beta-alanine attenuates lactic acid accumulation during intense exercise, and hence can improve exercise performance in endurance athletes (12). In fact, it's been shown to boost endurance by up to 12% in as little as six weeks on a 2 gram per day dose regimen. Beta-alanine provides increased muscle strength, power output, and cycling efficiency during intense workouts. It is with such enhancement that beta-alanine may promote fat loss and a leaner physique (13), not to mention carnosine serves as an acid buffer in skeletal muscles, hence balancing PH. Beta-alanine increases vasodilation, which means better blood flow, hence increasing the delivery of oxygen and nutrients to your brain and skeletal muscles (14). Beta-alanine attenuates neuromuscular fatigue, especially in the geriatric population, and preliminary evidence indicates that beta-alanine may improve tactical performance (11). Tactical fitness entails sport-specific decision making and reaction to stimuli, which carries over into functional athletic movements and even analytical and creative thinking (10). Whether it regard physical or mental tasks, anxiety can be a debilitating factor. Beta-alanine has anxiolytic properties (6), hence further benefiting mental and physical performance.

Anti-aging

Aside from enhancing physical performance, carnosine serves as an antioxidant and anti-aging compound (3,15). As we age our carnosine levels decline, and research shows that replenishing one's carnosine stores might slow the aging process, hence promoting longevity. Mechanistically, carnosine exerts anti-aging effects likely via its ability to reduce errors in protein metabolism, as the accumulation of aberrant proteins is strongly associated with the aging process. These anti-aging effects likely derive from its role as an antioxidant, a chelator of toxic metal ions, and an antiglycation agent (3).

Affecting Carnosine Concentration:

Beta-alanine is the limiting factor in carnosine production (3). Although carnosine is composed of beta-alanine and histidine, beta-alanine is the big player in terms of increasing carnosine levels. It is only with a deficiency in histidine that supplementing it would affect carnosine concentration. Muscular carnosine levels may increase in as fast as two weeks with beta-alanine supplementation (5). Further, muscle contraction isn't required to increase carnosine levels, and so it's recommended to supplement with beta-alanine on off days as well (16). Shortly after beginning a workout routine, our muscles use up their stores of carnosine; one contributor to delayed onset muscle soreness (DOMS). This means that if you have higher amounts of carnosine muscle stores, then it should take longer for the muscles to become fatigued during strenuous physical activities such as weightlifting, sprinting, or long-distance running. Carnosine also mitigates the adverse effects of exercise-induced lactic acid production.

Food Sources

The top food sources of beta-alanine are meat, poultry, and fish (3). Beta-Alanine can be found in foods like chicken breast, beef steak, pork chops, and fish such as tuna or halibut for example. One of our golden rules regarding supplementation here at Wend Wellness, is that you should aim to get all your vitamins, minerals, and other nutrients from food first and foremost. That being said, additional supplementation with beta-alanine may be beneficial if you're looking to further enhance your mental and physical performance.

Dosage Rationale

Studies have used doses ranging from .8-6.4 grams per day (g/day), and beta-alanine is most often taken by adults in oral doses of 1.6-6.4 grams daily for up to 12 weeks (18). For improved athletic performance, 2.4-6.4 g/day has been utilized for up to 10 weeks. Other sources recommend taking 3–6.5 g/day prior to lengthy-rigorous exercise (16). 4-6 g/day, for at least 2 to 4 weeks, has been shown to improve exercise performance, with more pronounced effects being evident in short bouts lasting 1 to 4 minutes (11). 800 milligrams (mg) thrice daily for 90 days was shown to delay the onset of neuromuscular fatigue and increase physical working capacity in elderly men and women (17). Additionally, 800-1600 mg 2x/day has been used for up to 12 weeks.

All above-mentioned doses however, regard supplementing with beta-alanine in isolation. This is one very important reason that we opted for the lower end of the dosage range in SUPER U, having included many other ingredients which act synergistically with beta-alanine in our formula. Based on evidence showing that .8-1.6 grams reduces the risk of suffering the “tingles” (paresthesia), our testing process, and our other supplemental inclusions; we found 1.6 grams to be the perfect dosage for providing a strong degree of the above-mentioned benefits, while mitigating the chances of experiencing paresthesia. Albeit innocuous, paresthesia is considered an uncomfortable side effect to many, and so we prefer to avoid it. Further, due to the fact that the majority of the other ingredients in SUPER U are most effective when taken on an empty stomach, we recommend taking SUPER U without food, since this would increase blood concentrations of beta-alanine faster. This provides a more rapid effect and “kicks you in” quicker upon ingestion. Having said that, when taken with meals; bet-alanine supplementation may promote a slightly greater increase in muscle carnosine levels than when taken between meals. This is one reason we recommend that SUPER U be taken “preferably without food”, but don't mark such directed usage as imperative. In reiteration, carnosine stores build over time, and so it's important to supplement beta-alanine on off days as well as training days to maximize carnosine reservoirs.

Side effects

No side effects have been reported with lower doses of beta-alanine (such as included in SUPER U). Moderate to higher doses may cause flushing or tingling. If you experience any tingling (paresthesia), know that it is a completely harmless side effect, and may be reduced by dividing supplementation into multiple smaller doses throughout the day.

Our sourcing

At Wend Wellness we use only fully natural ingredients in all our products. Our sourcing of beta-alanine is no different, as we provide you with a non-GMO, gluten free, and pure form of the amino acid. All of our products are third party tested for purity, and all Wend Wellness products are held to the highest standard of quality and efficacy.

*These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, cure, or prevent any disease.

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