XymoBolX™

Anabolic Amino Acid Complex*

Available in Fruit Punch and Lemon

Clinical Applications

- Supports Muscle Protein Synthesis in Both Young and Older Adults*
- Supports Muscle Recovery After Exercise*
- Provides Building Blocks for Muscle Strength and Function*

XymoBolX™ *features a patented blend of amino acids formulated to promote muscle protein synthesis. Whether your goal is to provide building blocks for muscle strength and function or boost muscle recovery after exercise, XymoBolX provides a researched combination and ratio of amino acids to support your muscle health.**

Discussion

The essential amino acid (EAA) composition that comprises **XymoBolX™** was developed by internationally recognized researchers in the fields of muscle metabolism as well as aging and longevity. This blend has been meticulously refined over the last several decades and is the subject of multiple patents, including for improved muscle recovery[1] and improved muscle protein synthesis.[2]*

Quality Not Quantity

Of the 20 amino acids (AA) that make up proteins found in the human body, 9 are deemed essential, meaning that they cannot be produced endogenously and must be consumed through dietary means.[3] The EAAs are primarily responsible for the biological process of muscle protein synthesis in both the young and older populations.[4,5] Moreover, studies demonstrate that there is no additional benefit to muscle protein synthesis from adding nonessential AAs to an EAA supplement. For instance, compared with the provision of 3.6 g of EAAs alone, the addition of 3.6 g of nonessential AAs produced no additional benefit to net muscle balance.[6] Likewise, an EAA supplement bolus—15 g with the 9 EAAs in similar ratios to the patented blend—had twice the impact on muscle protein synthesis as that of an equal amount of high-quality protein.[5]*

Why Include Arginine?

Arginine is considered a conditionally essential amino acid, meaning that under certain pathophysiological conditions, its synthesis is limited and fails to meet physiological needs.[3] In healthy young adults, sufficient arginine can be synthesized to meet normal demands. However, during rapid growth or in response to stress, there are heightened needs for arginine that may not be fully met. Furthermore, there is evidence that arginine has a unique stimulatory effect on muscle protein synthesis. While all mechanisms have not been fully elucidated and are likely multifactorial, it is known that arginine converts to nitric oxide, which relaxes blood vessels and improves blood flow to muscles. Additionally, arginine availability influences its own catabolism and that of other amino acids by controlling ureagenesis, the elimination of nitrogenous waste of protein metabolism. This critical finding solidified the need to add arginine to the EAA formulation because without it, plasma arginine decreases, therefore potentially reducing the rate of endogenous protein synthesis.[7]*

Essential Amino Acids and Exercise

Gains in muscle mass and quality attributed to the stimulation of muscle protein synthesis by EAAs can translate to improved physical performance and functional outcomes.[3,5] Ingestion of EAA immediately before or after resistance exercise can impact an anabolic response in skeletal muscle, but AA uptake may be greater when consumed before exercise, which could be attributed to the stimulatory effect of exercise on blood flow.[3,8] Additionally, free-form EAAs are often considered for use over intact proteins before rigorous exercise because they are rapidly absorbed, require little to no digestion, and confer minimal gastric load.[3]*

Results from acute studies have shown that exercise and EAA intake have additive effects on muscle protein synthesis, and, over time, exercise may increase the beneficial effects of EAA on lean body mass, strength, and the functional parameters of muscle.[7] Furthermore, supplementation with branched-chain AAs, such as leucine, both before and after exercise has been demonstrated to hasten postexercise muscle recovery, promote muscle protein synthesis, and modulate exercise-related cytokine production.[9-11]*

In a study comparing the independent and combined effects of EAAs and intense exercise on muscle function and lean mass in overweight and obese adults (N = 66), it was demonstrated that EAA may enhance muscle protein synthesis, support improvements in muscular size and quality, and promote recovery after exercise. Subjects assigned to 8 weeks of high-intensity interval training (HIIT) showed improved muscle size and quality. Comparatively, those subjects who were given 3.6 g of EAA supplementation twice daily combined with HIIT demonstrated enhanced muscular adaptation via increased protein turnover. The researchers concluded that significant increases in muscle quality could be achieved with HIIT training, but combining exercise intervention with daily EAA supplementation yielded more significant results, with the potential for being an effective approach to supporting cardiometabolic health.[4] Studies on the effects of EAAs on functional outcomes in the absence of exercise training have primarily focused on aging or compromised populations.[3]*

Muscle Loss with Aging

With aging comes innate metabolic changes that result in a natural and gradual decline in muscle mass (catabolism), strength, and function. Age is also typically associated with a more sedentary lifestyle. Increased protein intake is often recommended in the older population to help stave off lean muscle loss, yet providing dietary or isolated protein supplements may not be an optimal solution. In addition to being a source of protein, meal replacement–type protein supplements may contain significant calories and carbohydrates and have less of an anabolic response when compared with the effect of EAAs alone.[12] Intact proteins also have a comparatively slower rate of digestion and absorption than free EAAs, as indicated by research demonstrating the increased efficiency of free EAAs in stimulating muscle protein synthesis.[13] Additionally, without an increase in physical activity, consuming protein drinks may lead to reduced food intake, resulting in calorie substitution rather than supplementation.[14]*

In a study comparing net muscle protein synthesis in healthy young (N = 6) and older (N = 7) subjects, both groups demonstrated a benefit for EAA (15 g) supplementation. While the older group had a slower rate of muscle protein anabolism, ingestion of EAA was effective at acutely stimulating muscle synthesis in both age groups.[5] Research has also demonstrated significant muscle anabolism benefits of EAAs at lower dosages. In another study assessing the effect of a low-dose (3.6 g) EAA composition in healthy subjects (N = 12) over age 65, results indicated high efficiency for a low dose in stimulating muscle protein synthesis.[13]*

XymoBolX is a low-calorie, carbohydrate-free dietary supplement featuring a targeted composition of EAAs, leucine, and arginine to support muscle protein synthesis.[13] This formula is registered as NSF Certified for Sport®, a verification signifying that a product does not contain masking agents—substances prohibited by major athletic organizations—or unsafe contaminant levels.*

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

Body Composition

Joint and Muscle Support

NSF Certified for Sport

Sports Nutrition

XymoBolX™ Fruit Punch Supplement Facts

Serving Size: 1 Scoop (about 7 g)
Servings Per Container: About 30

	Amount Per Serving	%Daily Value
Calories	30	
Total Carbohydrate	2 g	1%‡
Sodium	40 mg	2%
L-Leucine	1.5 g	**
L-Lysine HCL	672 mg	**
L-Valine	427 mg	**
L-Isoleucine	414 mg	**
L-Arginine	405 mg	**
L-Threonine	363 mg	**
L-Phenylalanine	260 mg	**
L-Methionine	128 mg	**
L-Histidine	64 mg	**
L-Tryptophan	2.5 mg	**

‡ Percent Daily Values are based on a 2,000 calorie diet.
** Daily Value not established.

Other Ingredients: Citric acid, malic acid, natural flavors (no MSG), sea salt, stevia, and riboflavin (for color).

DIRECTIONS: Dissolve 1 scoop (7 g) into 8-12 oz of room-temperature water and consume once daily between meals, or use as directed by your healthcare professional.

Consult your healthcare professional prior to use. Individuals taking medication should discuss potential interactions with their healthcare professional. Do not use if tamper seal is damaged.

STORAGE: Keep closed in a cool, dry place out of reach of children.

FORMULATED TO EXCLUDE: Wheat, gluten, yeast, soy, animal and dairy products, fish, shellfish, peanuts, tree nuts, egg, sesame, ingredients derived from genetically modified organisms (GMOs), artificial colors, and artificial sweeteners.

1. Protected by U.S. patents 9,364,483 and 11,273,138.

NSF CERTIFIED SPORT

References

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