

# XS

# XS™ Amino Fuel

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# FAQs



## What is L-leucine?

L-leucine is an essential amino acid that is known as a key activator of muscle protein synthesis (MPS)/protein production. Ingestion of an amino acid mixture containing extra leucine has the potential to affect muscle protein metabolism in several ways. In addition to providing leucine and other amino acids as precursors for protein synthesis, the extra leucine may stimulate specific intracellular pathways associated with MPS. Ingestion of extra leucine may be particularly important for the stimulation of MPS in the elderly because evidence indicates that muscle protein synthesis becomes less responsive to the stimulatory effects of leucine with aging. Leucine-enriched BCAAs acutely enhance post-exercise MPS and moderately attenuate muscle damage, which has been suggested to be important for muscle repair and recovery.

## What is the scientific evidence used for the formula development?

Taking 4.1 g of EAAs and Arginine daily with regular strength training exercise was shown to:

### IMPROVE BODY COMPOSITION:

- Increase in lean mass
- Increase in arm and leg muscle mass

### REDUCE VISCERAL FAT:

- Significant reduction in visceral fat mass and volume

### INCREASE MUSCLE STRENGTH AND ENDURANCE:

- ~18% increase in upper body strength
- ~40% increase in lower body strength
- 77% increase in upper body endurance
- 75% increase in lower body endurance

## Reference

Morris, K., Missman, R., & Cook, C. (2024). Essential amino acid supplementation combined with resistance training increases muscle mass, strength and endurance while reducing visceral fat mass in healthy adults. *International Journal of Sport Nutrition and Exercise Metabolism*, 34(S1), S1–S12.

<https://doi.org/10.1123/ijsem.2024-0005>

## Why did we change the formula?

Based on recent studies, we realized the essentiality of L-leucine to maximize the efficiency of protein production. L-leucine is known as a key activator of protein synthesis/protein production, which becomes especially important as we age. The other ingredient levels have negligible to no changes in concentration to keep the heritage of the formula and its performance.

## Why do we have 5:1:1 BCAA ratio and why is that good?

Based on scientific studies<sup>1</sup>, ingestion of extra leucine may be particularly important for the stimulation

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<sup>1</sup> <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5118760/> : Borack MS, Volpi E. Efficacy and Safety of Leucine Supplementation in the Elderly. *J Nutr*. 2016 Dec;146(12):2625S-2629S. doi: 10.3945/jn.116.230771. Epub 2016 Nov 9. PMID: 27934654; PMCID: PMC5118760.

<https://www.nature.com/articles/ejcn201591> : Ispoglou, T., White, H., Preston, T. et al. Double-blind, placebo-controlled pilot trial of L-Leucine-enriched amino-acid mixtures on body composition and physical performance in men and women aged 65–75 years. *Eur J Clin Nutr* 70, 182–188 (2016). <https://doi.org/10.1038/ejcn.2015.91>

of muscle protein synthesis (MPS)/protein production in the elderly, because evidence indicates that muscle protein synthesis becomes less responsive to the stimulatory effects of leucine with aging. Leucine-enriched BCAAs enhance post-exercise muscle protein synthesis and moderately attenuate muscle damage, which has been suggested to be important for muscle repair and recovery. Research suggests that 20g is the maximally effective protein dose per meal for healthy, young individuals. Protein consumed beyond this level is oxidized at a higher rate and results in urea production, indicating there is a limit of amino acids (AAs) that can be used for MPS.

20g of protein from a high-quality protein supplement, like a whey protein powder, contains roughly 1.8g of leucine. The formula offers 1.976g of leucine per serving. There is evidence to suggest that there is a max leucine threshold of roughly 2g so we made sure to optimize our formula for maximal MPS efficiency without exceeding the leucine threshold<sup>2</sup>.

### **What makes this product stand out from the competition?**

A refined and optimized formula with more EAAs overall and 38% more L-leucine, to maximize the efficiency of protein production\*

- Formula backed with scientific support.
- Contains all 9 EAAs. Some competitors don't offer all 9 EAAs in their formula.
- Formula doesn't contain any stimulants, sugar or other vitamins, so you can continue taking other supplementation according to your routine and goals.
- Sugar free formula per serving.
- Based on more than 40 years' worth of research in the Sport Nutrition Landscape. Researchers from many well-known academic and scientific institutions have contributed to hundreds of publications that support the benefits of essential amino acids. This is unlike most publications by other researchers which report findings based on various amounts of amino acids combined with other ingredients, most often carbohydrates, meaning findings are not a perfect correlate to products sold commercially by other entities.

\*Compared to XS Amino Fuel Wild Berry flavor

### **Why is the product sweet?**

To ensure it tastes as good as possible. Amino acids are naturally very bitter and difficult to formulate with – it is important to mask the bitter notes with a robust sweetener system and bitter blocker. There is also a greater concentration of natural flavor content in the formula resulting in a 'stronger' flavoring – many consumers may associate flavor intensity with sweetness. Also, sweetness is an attribute of perceived taste – sweetness does not refer to the physiochemical composition of the product itself.

### **Why doesn't the product dilute well in water?**

This is the nature of amino acids: they don't dissolve well in water due to their chemical profile. The formula delivers more amino acids per serving, which is why a consumer may see

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<https://journals.physiology.org/doi/full/10.1152/ajpendo.00488.2005> : Christos S. Katsanos, Hisamine Kobayashi, Melinda Sheffield-Moore, Asle Aarsland, and Robert R. Wolfe 01 AUG 2006 <https://doi.org/10.1152/ajpendo.00488.2005>

<sup>2</sup> <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8295465/> : Zaromskye G, Prokopidis K, Ioannidis T, Tipton KD, Witard OC. Evaluating the Leucine Trigger Hypothesis to Explain the Post-prandial Regulation of Muscle Protein Synthesis in Young and Older Adults: A Systematic Review. *Front Nutr.* 2021 Jul 8;8:685165. doi: 10.3389/fnut.2021.685165. PMID: 34307436; PMCID: PMC8295465.

<https://pubmed.ncbi.nlm.nih.gov/27743615/> : Kramer IF, Verdijk LB, Hamer HM, Verlaan S, Luiking YC, Kouw IWK, Senden JM, van Kranenburg J, Gijzen AP, Bierau J, Poeze M, van Loon LJC. Both basal and post-prandial muscle protein synthesis rates, following the ingestion of a leucine-enriched whey protein supplement, are not impaired in sarcopenic older males. *Clin Nutr.* 2017 Oct;36(5):1440-1449. doi: 10.1016/j.clnu.2016.09.023. Epub 2016 Sep 29. PMID: 27743615.

undissolved particulate when mixing a serving in water. Please use a shaker for best dissolving results.

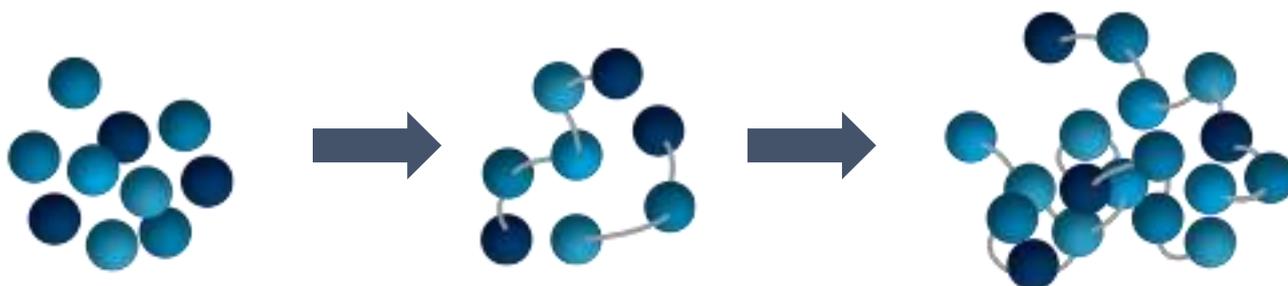
### Is there a difference between XS Muscle Multiplier™ in Australia/New Zealand and the US formula? What is it?

XS Amino Fuel™ and XS Muscle Multiplier™ Watermelon flavored formula in US and ESAN market is the same.

### What is the difference between amino acids and protein?

Proteins, received from your diet, are molecules that are made up of amino acids. Your body will break down proteins into amino acids to then form protein the body can use to support soft tissue. Body proteins are found in every cell, every tissue, every organ, and every muscle.

Amino acids are the building blocks of protein so your body will quickly use them to create the body proteins it needs. There are 22 amino acids from which the body builds proteins. You can think of these amino acids like the letters of the alphabet. By combining different letters in different sequences, you make different words. The same goes for amino acids – your body combines different amino acids in different ways to make different proteins with different functions. Each body protein has its own sequence of amino acids. There are 9 Essential Amino Acids (EAAs) that your body cannot produce on its own and must come from diet or supplementation.



**AMINO ACID**

**PEPTIDES**

**PROTEIN**

### What is the difference between Nutrilite™ All Plant Protein, XS Amino Fuel™, and XS™ Whey Protein Powder and when should I take any of them?

- XS Amino Fuel contains free amino acids that will be quickly absorbed\*.
- Nutrilite™ All Plant Protein is designed to support daily foundational protein needs. It is a plant-based protein, suitable for vegetarians.
- XS™ Whey protein Powder supports recovery, development and maintenance of lean muscle mass post workouts.

\*Amino acids are the building block of proteins. Protein contribute to maintenance and growth of muscle mass.

## Why it is not enough to take Nutrilite™ All Plant Protein?

EAA's blend powder provides free amino acids format for immediate absorption in your body. Nutrilite All Plant Protein provides the protein for constant daily protein needs. Both can be combined depending on your protein needs.

XS Amino Fuel should not be combined with any other form of protein at time of use.

It is best to have at least 30 minutes to 1 hour between amino acids and proteins intake, so there is no blockers to the absorption of amino acids and proteins breakdown which can happen if taken at the same time.

For sport enthusiasts, based on scientific studies<sup>3</sup>, the 30-minute window following catabolic states is when the need for EAAs is the greatest to support building lean muscle mass and muscle recovery. By consuming EAAs within 30 minutes of exercise, we are loading our plasma prior to that time in which there is the greatest potential for muscle protein synthesis, and we are inhibiting further muscle protein breakdown in support of our recovery.

## If I was using XS™ Whey Protein Powder before, do I need to switch now, or I can combine both?

Both can be combined, but not at the same time. Protein supplementation can be taken as a meal replacement, in between meals as a snack and XS Amino Fuel is recommended to be taken first thing in the morning or/and immediately after training for maximizing muscle protein synthesis/production.

Protein provides satiety and more energy in the form of calories. It is up to the individual needs of the consumer depending on lifestyle, goals and preferences whether they choose to supplement with both or with one or the other.

## How many calories per serving does it provide?

27 calories per serving. After dilution in water, 10.8 kcal per 100ml.

## Is there added sugar in the product?

There is no added sugar.

XS Amino Fuel is sugar free per serving.

## Is it soy and gluten free?

YES. It is soy free and gluten free.

## Is it suitable for vegetarians?

No, it is not suitable for vegetarians.

## Is it halal?

No, it is not halal.

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<sup>3</sup> <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3577439/> : Aragon AA, Schoenfeld BJ. Nutrient timing revisited: is there a post-exercise anabolic window? J Int Soc Sports Nutr. 2013 Jan 29;10(1):5. doi: 10.1186/1550-2783-10-5. PMID: 23360586; PMCID: PMC3577439.

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3381813/Atherton> : PJ, Smith K. Muscle protein synthesis in response to nutrition and exercise. J Physiol. 2012 Mar 1;590(5):1049-57. doi: 10.1113/jphysiol.2011.225003. Epub 2012 Jan 30. PMID: 22289911; PMCID: PMC3381813.

<https://jissn.biomedcentral.com/articles/10.1186/1550-2783-5-17> : Kerkick, C., Harvey, T., Stout, J. et al. International Society of Sports Nutrition position stand: Nutrient timing. J Int Soc Sports Nutr 5, 17 (2008). <https://doi.org/10.1186/1550-2783-5-17>

<https://www.mdpi.com/2072-6643/12/8/2457> : Gwin, J.A.; Church, D.D.; Wolfe, R.R.; Ferrando, A.A.; Pasiakos, S.M. Muscle Protein Synthesis and Whole-Body Protein Turnover Responses to Ingesting Essential Amino Acids, Intact Protein, and Protein-Containing Mixed Meals with Considerations for Energy Deficit. Nutrients 2020, 12, 2457. <https://doi.org/10.3390/nu12082457>

### **Does this product contain any allergens?**

No, this product does not contain any allergens.

### **Why do we have 9 Amino Essential Acids as well as L-arginine (a non-essential AA) in the product?**

Arginine is conditionally essential amino acid that may become essential under certain physiological conditions such as illness, certain disease states and/or catabolic states such as during resistance training.

### **What is the source of Arginine?**

It is plant sourced from sugar fermentation from glucose.

### **What are the sources of the essential amino acids in XS Amino Fuel? Do they have animal or plant origin?**

They are a combination of plant, animal and synthetic sources.

### **Are there any animal ingredients?**

Yes, leucine is from duck feathers.

### **If you are not a sportsman, why should you use it?**

Even on days when we are not exercising, our muscle protein is still in a constant state of turnover, meaning new protein is continuously being produced while older proteins are being broken down. Young adults through the very elderly population can benefit from consuming EAAs, as well as those who are overweight or obese, and/or those who are under calorie restriction to lose weight. Peak muscle mass is achieved in our mid-twenties, with progressive declines observed thereafter. Therefore, supporting our muscle mass\* as well as body essential functions, reversing, delaying, and/or preventing age-associated loss of muscle mass, otherwise known as sarcopenia, and maintaining functional mobility is paramount to ensuring a good quality of life in our later years.

### **From what age can you take XS Amino Fuel?**

Any healthy adult from 18 years old can take XS Amino Fuel to support body essential functions.

\*Amino acids are the building block of proteins. Protein contribute to maintenance and growth of muscle mass.

### **It is recommended to use the product with 300ml water; can I use it with more water to reduce the sweetness?**

Yes, you can use more water according to your taste.

### **When should I take XS Amino Fuel?**

Shake and drink first thing in the morning as your muscles were starving all night – it is a breakfast for your muscles. You can also take it immediately after your workout when protein synthesis is at maximum.

### **How many portions per day I can take?**

1 to 2 servings per day

### **Should I take XS Amino Fuel? on an empty stomach?**

It can be consumed both on an empty stomach and after a meal. However, for optimal results, we recommend taking it on an empty stomach to grant its benefits and fully harness its potential.

### **Can it be consumed together with other proteins at the same time?**

XS Amino Fuel can be taken any time, but it is best to have at least 30 minutes to 1 hour between amino acids and proteins intake, so that absorption of amino acids and proteins breakdown don't impact each other.

## Will I get lean muscles with taking XS Amino Fuel without doing sport?

It is recommended to take this product in combination with a resistance training program for optimizing results. Individual results will vary.

