

Leucine Powder

➔ The Moss Nutrition Professional Line ➔

ESSENTIAL AMINO ACID SUPPORT FOR HEALTHY MUSCLE MASS

Supplement Facts

Serving Size: 1 Scoop (approx. 2 grams)
Servings Per Container: Approximately 30

	Amount Per Serving	% Daily Value
L-Leucine	2 g	**

** Daily Value (DV) not established.

Other Ingredients: None.

SUGGESTED USE: 1 SCOOP (2 GRAMS) PER DAY, MIXED INTO A PROTEIN-CONTAINING BEVERAGE OR AS DIRECTED BY YOUR HEALTHCARE PROFESSIONAL.

WARNING: IF TAKING MEDICATION, PREGNANT OR NURSING, CONSULT A PHYSICIAN BEFORE USING.

- Nutritional support for healthy body composition.*
- Helps promote and maintain muscle tissue.*
- Researched effective in athletes & aging/elderly patients.*
- Tested for purity and potency.*

Leucine Powder from Moss Nutrition provides a pure source of L-leucine, an essential branched chain amino acid naturally found in high amounts in skeletal muscle tissue. Supplemental leucine has been researched for its ability to help promote muscle protein synthesis and to support healthy lean body composition in physically active and older adults.

Leucine plays an important role in energy production as a rapidly metabolized branched chain amino acid (BCAA). Following intestinal absorption, BCAAs bypass the liver and enter circulation directly where they become quickly available to muscle cells as a preferred source of energy. Leucine and its fellow BCAAs (valine and isoleucine) also help the body to conserve protein during times of increased physiologic stress, hence leucine requirements increase in response to chronic illness, infection, injury and other instances of elevated allostatic load.

Leading sources of leucine-rich foods include animal proteins (notably tuna, salmon and beef) and dairy products, notably whey protein. Peanuts, chickpeas, brown rice, wheat germ and pea protein are excellent plant-based sources of leucine.

As a branched chain amino acid, leucine has long been used by members of the natural body building community for its anabolic benefits. Leucine has been shown to help enhance protein synthesis and reduce protein breakdown during strenuous exercise, particularly in regard to endurance activities such as cycling and long-distance running.

In addition to benefits for athletes, clinical studies suggest great potential for leucine supplements in helping to counteract sarcopenia, the normal decrease in muscle protein metabolism and loss of muscle mass associated with aging in both men and women. Sarcopenia is believed, at least in part, to result from decreased protein synthesis related to a defect in the

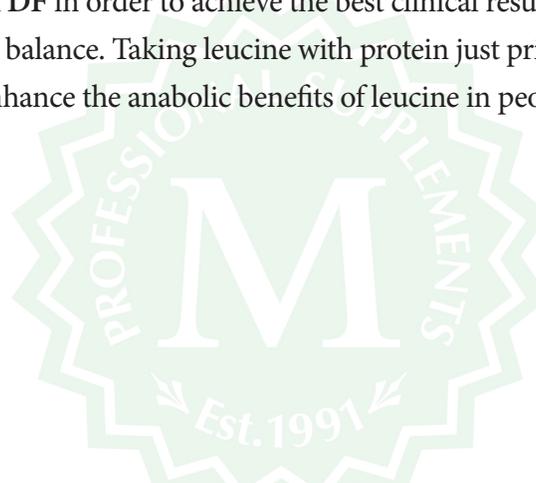
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*These statements have not been evaluated by the Food and Drug Administration.
This product is not intended to diagnose, treat, cure or prevent any disease.

mechanism by which leucine stimulates activity in the mTOR signaling pathway. Because low leucine levels and protein deficient diets contribute to the steady loss of muscle mass that plagues aging populations, leucine supplementation may be an effective way to help support healthy body composition in your middle-aged and elderly patients.

Leucine also helps to drive insulin metabolism in a positive direction by increasing insulin production and insulin sensitivity in people who are deficient in leucine. Research suggests that increasing dietary leucine may be useful in helping to manage obesity-related insulin resistance. In a 2011 animal study, doubling dietary leucine produced a marked improvement in glucose tolerance and insulin signaling in obese, inflamed, insulin resistant rats without impacting food intake. Long-term treatment with leucine also has been found to improve glycemic control in humans with Type 2 diabetes, and to improve insulin secretion via the upregulation of key metabolic genes.

Leucine Powder should always be taken in conjunction with a protein-containing meal or protein shake such as **MNP Select Whey**, **Select Meal** or **Select Meal DF** in order to achieve the best clinical results for optimization of muscle mass and to help maintain a healthy amino acid balance. Taking leucine with protein just prior to, or immediately following weight bearing exercise has been shown to enhance the anabolic benefits of leucine in people of all ages.



REFERENCES

1. Short KR, et al. Age and aerobic exercise training effects on whole body and muscle protein metabolism. *Am J Physiol Endocrinol Metab.* 2004 Jan;286(1):E92-101.
2. Blomstrand E, et al. Branched-chain amino acids activate key enzymes in protein synthesis after physical exercise. *J Nutr.* 2006 Jan;136(1 Suppl):269S-73S.
3. Nicastro H, et al. An overview of the therapeutic effects of leucine supplementation on skeletal muscle under atrophic conditions. *Amino Acids.* 2011 Feb;40(2):287-300.
4. Casperson SL, et al. Leucine supplementation chronically improves muscle protein synthesis in older adults consuming the RDA for protein. *Clin Nutr.* 2012 Aug;31(4):512-9.
5. Macotela Y, et al. Dietary leucine--an environmental modifier of insulin resistance acting on multiple levels of metabolism. *PLoS One.* 2011;6(6):e21187. doi: 10.1371/journal.pone.0021187. Epub 2011 Jun 22.
6. Manders RJ, et al. Insulinotropic and Muscle Protein Synthetic Effects of Branched-Chain Amino Acids: Potential Therapy for Type 2 Diabetes and Sarcopenia. *Nutrients.* 2012 Nov 8;4(11):1664-78.
7. Yang J, et al. Leucine metabolism in regulation of insulin secretion from pancreatic beta cells. *Nutr Rev.* 2010 May;68(5):270-9.
8. Stark M, et al. Protein timing and its effects on muscular hypertrophy and strength in individuals engaged in weight-training. *J Int Soc Sports Nutr.* 2012 Dec 14;9(1):54.

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