

L-Lysine



Clinical Applications

- Provides an Essential Amino Acid
- Provides Balance to a High Intake of Arginine
- Supports Synthesis of Collagen
- Supports Healthy Growth

L-Lysine is an amino acid that is essential to human physiology. Lysine is vital for normal growth and for the manufacture of collagen, a substance important for healthy skin, bones, tendons, and cartilage. Supplemental lysine may be appropriate for individuals on a high-arginine diet.

All 3rd Opinion Inc. Formulas Meet or Exceed cGMP Quality Standards

Discussion

An “Essential” Amino Acid

An amino acid is a building block of protein. It is considered to be “essential” because the body needs it but cannot manufacture it. The amino acid must therefore be consumed via food or a dietary supplement. Lysine, known chemically as 2,6 diaminoheptanoic acid, is one of nine essential amino acids. Unlike humans, plants and bacteria can synthesize lysine from aspartic acid.

Daily Requirement

Dating back to the first nitrogen-balance studies done by Rose in 1957, and depending upon which organization’s recommendation one chooses to accept, the recommendations for daily intake of essential amino acids have varied over time. The current daily adult recommendation for lysine intake, according to the World Health Organization (WHO), is 30 mg/kg body weight, or 2045 mg daily for a 150-pound adult. This recommendation is based on a study (n=16 healthy male Indians) of leucine oxidation or balance using four lysine intakes.^[2] The Food and Agriculture Organization (FAO) estimates the adult requirement at 12 mg/kg/d. Canadian researchers, who found that the mean and population-safe requirement for school-age healthy children is essentially the same as for adults, proposed adding to the mean estimate 6 mg/kg/d to cover the amount of lysine needed for growth.^[3] For proper growth, children aged three and older have a 10-20% higher need for lysine than adults, while an infant’s need for this essential amino acid can be as much as 90% higher than an adult’s.^[4] A University of Toronto study concluded that women have an increased need for lysine during the luteal phase of their menstrual cycle due to increased protein catabolism.^[5]

The need for lysine is mostly satisfied by an average adult diet in the United States, which is 610 grams of lysine per day. However, athletes and non-legume-consuming vegans and burn patients may require more lysine. Signs of insufficient dietary intake of lysine include fatigue, agitation, dizziness, nausea, poor appetite, slow growth, bloodshot eyes, reproductive disorders, and anemia. Healthcare practitioners employ supplemental lysine for support in a variety of protocols.

The Importance of Lysine in Health

As a building block of protein, lysine is obviously important in the growth and repair of tissue. In addition, it is essential to the body’s synthesis of carnitine, a nutrient the body uses to convert fatty acids into energy and to maintain a healthy cholesterol level. Lysine also must be available for the synthesis of collagen, a substance needed for healthy bones and connective tissue such as skin, tendons, and cartilage. Lysine enhances calcium absorption and the incorporation of calcium into the bone matrix. It also supports renal conservation of calcium by reducing urinary loss of this mineral.^[6] In the presence of higher amounts of diet- or supplement-derived arginine in the bloodstream, additional lysine may be needed to provide balance between these two amino acids.

A Glance at Some Research

A study in tissue culture demonstrated that the addition of lysine antagonized the viral growth-supporting nature of arginine.^[7] There is current interest in the possible benefit of lysine supplementation to support healthy cognition during the aging process.^[8] A three-month, randomized, double-blind, Syrian-population-based study (n=93) demonstrated the negative mental-health impact of consuming mostly incomplete-protein wheat as a dietary staple. As it is in most cereal grains, including wheat, lysine is the limiting amino acid. When the cereals were fortified with lysine, cortisol levels declined, and there was potentiation of benzodiazepine receptors in study subjects.^[9]





Supplement Facts

Serving Size: 2 Capsules
Servings Per Container: 45

Amount Per Serving %Daily Value		
L-Lysine (as L-lysine HCl)	1000 mg	**

** Daily Value not established.

Other Ingredients: HPMC (capsule), stearic acid, microcrystalline cellulose, magnesium stearate, and silica.

Dosage

Preferably on an empty stomach, take one to two capsules three times a day, or as directed by your healthcare practitioner.

References

1. Rose WC. The amino acid requirements of adult man. *Nutr Abstr Rev Ser Hum Exp*. 1957 Jul;27(3):631-47. [PMID: 13465065]
2. Kurpad AV, Raj T, El-Khoury A, et al. Lysine requirements of healthy adult Indian subjects, measured by an indicator amino acid balance technique. *Am J Clin Nutr*. 2001 May;73(5):900-7. [PMID:11333843]
3. Elango R, Humayun MA, Ball RO, et al. Lysine requirement of healthy school-age children determined by the indicator amino acid oxidation method. *Am J Clin Nutr*. 2007 Aug;86(2):360-5. [PMID: 17684206]
4. FAO Nutrition Meetings Report Series, No. 52; WHO Technical Report Series, No. 522, 1973 (*Energy and protein requirements: report of a Joint FAO/WHO Ad Hoc Expert Committee*). <http://www.fao.org/DOCREP/003/AA040E/AA040E05.htm#ch5.6>. Accessed June 10, 2011.
5. Kriengsinyos W, Wykes LJ, Goonewardene LA, et al. Phase of menstrual cycle affects lysine requirement in healthy women. *Am J Physiol Endocrinol Metab*. 2004 Sep;287(3):E489-96. [PMID: 15308475]
6. Furst P. Dietary L-Lysine Supplementation: A Promising Nutritional Tool in the Prophylaxis and Treatment of Osteoporosis, *Nutrition*, January/February 1993;9(1):71-72. [PMID: 8467115]
7. Griffith RS, DeLong DC, Nelson JD. Relation of arginine-lysine antagonism to herpes simplex growth in tissue culture. *Chemotherapy*. 1981;27(3):209-13. [PMID: 6262023]
8. Rubey RN. Could lysine supplementation prevent Alzheimer's dementia? A novel hypothesis. *Neuropsychiatr Dis Treat*. 2010 Oct 27;6:707-10. [PMID: 21127688]
9. Smriga M, Ghosh S, Mounemne Y, et al. Lysine fortification reduces anxiety and lessens stress in family members in economically weak communities in Northwest Syria. *Proc Natl Acad Sci U S A*. 2004 Jun 1;101(22):8285-8. [PMID: 15159538]

Cautions

Consult your healthcare practitioner before use. Keep out of reach of children. Avoid if allergic to any ingredient.

*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.

