

Cardiovascular Support\*

## Arginine Capsules

### Description

L-Arginine is a conditionally essential basic amino acid involved in urea metabolism and excretion as well as DNA synthesis. It serves either as a direct or indirect substrate for the synthesis not only of proteins, but also of nitric oxide nitrogen-containing signaling molecules, urea, polyamines, proline, glutamate, creatine and agmatine.\*

### Features & Benefits

- Serves as a substrate for nitric oxide nitrogen-containing signaling molecules\*
- Is an integral amino acid for urea cycle and protein / nitrogen metabolism\*
- Aids metabolic detoxification\*
- Supports bone and joint health\*
- Considered "conditionally essential" as an amino acid

### Suggested Usage

As a dietary supplement, take 2 capsules 3 times daily or as directed by a health care practitioner.

### Allergen Checklist

Contains no sugar, salt, starch, yeast, wheat, gluten, corn, soy, milk, egg, shellfish or preservatives.

### Cautions/ Interactions

Arginine may interact with antihypertensive medications, sildenafil and nitrates.<sup>4-5</sup> Arginine may also affect blood sugar levels.<sup>7</sup> If you are taking any of these medications or if you are diabetic, consult a healthcare practitioner before using this product.



### Technical Summary

- Conditionally Essential Amino Acid
- Supports Metabolic Detoxification
- Substrate for the Synthesis of Nitrogen-Containing Signaling Molecules

Arginine serves either as a direct or indirect substrate for the synthesis not only of proteins, but also of nitric oxide, urea, polyamines, proline, glutamate, creatine and agmatine.\*

### Mechanisms of Action

L-Arginine is well known as part of a cycle that includes ornithine and citrulline and links to the production of guanidines, agmatine, polyamines and urea metabolism as well protein synthesis more generally.<sup>1-3, 9</sup> As a substrate for the production of proline, arginine supports the synthesis of collagen and structural proteins.<sup>9</sup> As a substrate for the production on creatine, arginine supports energy metabolism and muscle growth.<sup>9</sup> Currently, the products of arginine catabolism are attracting the most attention. These products include the cell-signaling molecules nitric oxide, glutamate and agmatine.<sup>9</sup> L-arginine is a substrate for the nitric oxide synthase (eNOS) enzyme nitrogen-containing signaling molecules that in vascular endothelial cells converts L-arginine to nitric oxide (NO), also known as endothelium-derived relaxation factor (EDRF), an inducer of vasodilation.<sup>4-5, 9</sup> Similarly, arginine is consumed by iNOS as is indirectly involved in certain immune functions.\*<sup>10</sup>

## Clinical Applications

The key to arginine's clinical roles is its conditionally essential nature.<sup>1-3</sup> As a substrate for protein synthesis, including proline and thus collagen, arginine supports healing under circumstances that generate elevated demands for new tissue generation. Similarly, other conditions in which demand for arginine exceeds normal levels of intake or in which arginase activity reduces supply may benefit from supplementation.\*

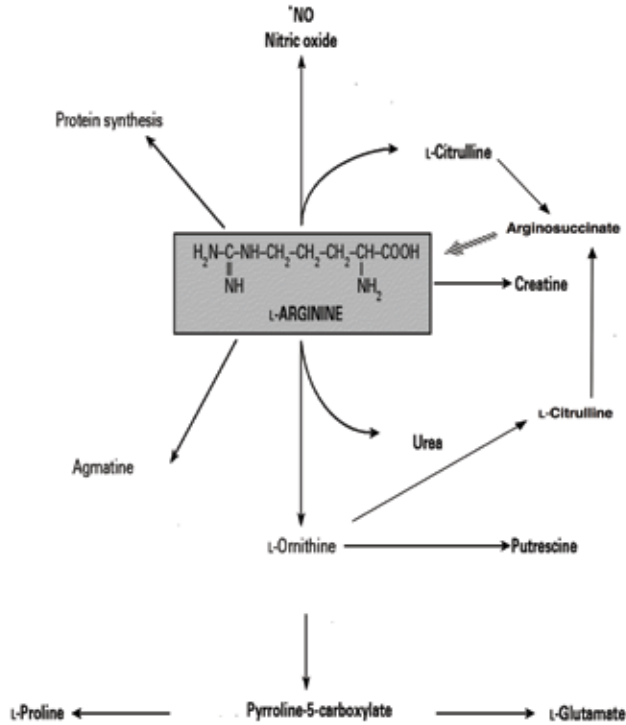


FIGURE 1 Metabolic pathways of arginine

## Complementary Products

**Coenzyme Q10 (Product Code P3182)** is offered as a separate product – CoQ 10 benefits cardiac function through energy production. **Acetyl-L-carnitine (Product Code P0076)** also often is recommended both for support of mitochondrial function and the maintenance of membrane structures.

Supplement Facts	P0030
Serving Size 2 Capsules	
	Amount Per Serving
<b>L-Arginine (Free-Form)</b>	<b>1.0 g (1,000 mg)*</b>

Other ingredients: Gelatin (capsule), Magnesium Stearate (vegetable source) and Silica.

Contains no sugar, salt, starch, yeast, wheat, gluten, corn, soy, milk, egg, shellfish or preservatives.

The L-Arginine used in this product is Pharmaceutical Grade (USP).

### REFERENCES

1. Tong BC, Barbul A. Cellular and physiological effects of arginine. *Mini Rev Med Chem* 2004;4(8):823-32. <http://www.ncbi.nlm.nih.gov/pubmed/15544543>
2. Cylwik D, Mogielnicki A, Buczek W. L-arginine and cardiovascular system. *Pharmacol Rep* 2005;57(1):14-22. <http://www.ncbi.nlm.nih.gov/pubmed/15849373>
3. Chionglo Sy BM, Dweik EE, Dweik RA. Chapter 36, Arginine and Nitric Oxide. In: *Modern Nutrition in Health and Disease*, 10th Ed. Shils ME, Shike M, Ross AC, Caballero B, Cousins RJ, eds. 2006 Lippincott Williams & Wilkins, Baltimore
4. Cheng JW, Balwin SN. L-arginine in the management of cardiovascular ... *Ann Pharmacother* 2001;35:755-64. <http://www.ncbi.nlm.nih.gov/pubmed/11408995>
5. Huynh NT, Tayek JA. Oral arginine ... its potential role in nitric oxide generation. *J Am Coll Nutr* 2002;21:422-7. <http://www.ncbi.nlm.nih.gov/pubmed/12356784>
6. Lyapina LA, Obergan TY, Pastorova VE. Anticoagulant effects of a complex of high molecular weight heparin and arginine. *Bull Exp Biol Med*. 2009 Mar;147(3):328-30. <http://www.ncbi.nlm.nih.gov/pubmed/19529854>
7. Gannon MC, Nuttall JA, Nuttall FQ. Oral arginine does not stimulate an increase in insulin concentration but delays glucose disposal. *Am J Clin Nutr*. 2002 Nov;76(5):1016-22. <http://www.ncbi.nlm.nih.gov/pubmed/12399273>
8. Daniels B, Linhardt RJ, Zhang F, et al. In vivo antithrombotic synergy of oral heparin and arginine: endothelial thromboresistance without changes in coagulation parameters. *Thromb Haemost*. 2006 May;95(5):865-72. <http://www.ncbi.nlm.nih.gov/pubmed/16676079>
9. Wu G, Morris SM Jr. Arginine metabolism: nitric oxide and beyond. *Biochem J*. 1998 Nov 15;336 ( Pt 1):1-17. <http://www.ncbi.nlm.nih.gov/pubmed/9806879>
10. Popovic PJ, Zeh HJ 3rd, Ochoa JB. Arginine and immunity. *J Nutr*. 2007 Jun;137(6 Suppl 2):1681S-1686S. <http://www.ncbi.nlm.nih.gov/pubmed/17513447>

Formulated by doctors and clinical scientists exclusively for licensed healthcare practitioners. Manufactured in an A-rated Good Manufacturing (GMP) Certified facility.

**PROTOCOL**  
FOR LIFE BALANCE™

Protocol For Life Balance™

Manufactured by NHG, Bloomingdale, IL 60108 Made in the U.S.A.

Toll Free 877.PROTO10 / Fax 800.886.1045 / [www.protocolforlife.com](http://www.protocolforlife.com)



Healthy Patients, Satisfied Physicians™



7 07359 18760 3

\*These statements have not been evaluated by the FDA. These products are not intended to diagnose, treat, cure or prevent any disease.