

Choline (bitartrate)

Key vitamin to support healthy methylation, cell function and neurotransmission[†]

INDICATIONS

- Ages 4 and up
- Pregnancy and post-menopause
- Low dietary intake (e.g., vegetarian/vegan diets)
- Polymorphisms in PEMT or MTHFD1 genes
- Supports cognitive function[†]
- Supports healthy hepatic fat metabolism[†]

BENEFITS

- Promotes optimal cellular function as a key building block for methylation[†]
- Supports cognitive function as a component of phospholipids and acetylcholine[†]
- Supports healthy hepatic fat metabolism[†]

FEATURES

- Provides 275 mg choline per capsule
- Highly bioavailable and researched choline bitartrate form

VERIFIABLE SCIENCE

While long considered a non-essential vitamin, recent evidence confirms that the body cannot synthesize enough choline to meet daily needs. This has prompted the National Academy of Science to create a daily value for choline of 550 mg. Dietary intake of choline is often below this level.¹ Choline is an important nutrient for methylation, cell membrane structure and neurotransmission, and lipid metabolism and transport. Choline and its metabolites are the major source of methyl groups in the diet. Methylation plays many roles including neurotransmission, vitamin assimilation, DNA synthesis and gene regulation.² Choline is required for the synthesis of phospholipids and acetylcholine, a neurotransmitter involved in attention, learning and memory.³ Certain genetic variations in MTHFD1 and PEMT, enzymes that play critical roles in methylation and phosphatidylcholine synthesis, respectively, have been associated with increased dietary choline needs.⁴⁻⁶ Since the de novo synthesis of phosphatidylcholine requires the estrogen-inducible PEMT enzyme, women with low estrogen levels and/or certain SNPs in the PEMT gene have increased choline needs.⁷ Postmenopausal women with lower estrogen have higher dietary choline

requirements because of reduced PEMT function.⁸ Choline requirements also increase during pregnancy.⁹ One clinical trial showed that women who consumed 480 mg of choline daily during pregnancy had offspring with faster processing speed than those who did not.¹⁰ A randomized, double blind, placebo-controlled trial suggests that higher intakes of choline also promote healthy hepatic fat metabolism.^{11†}

SUGGESTED USE

As a dietary supplement, take 1 capsule, 1-2 times daily, with meals.

STORAGE

Store in a cool, dry place.

WARNING

If you are pregnant or lactating, have any health condition or are taking any medication, consult your health professional before use.

SOURCE

- Choline bitartrate is synthetic

NOTES

Size 00 caps

Bottle count 100

Order code CLB1

Bottle size 290 cc

REFERENCES

1. Wiedeman AM, et al. *Nutrients*. 2018 Oct; 10(10):1513.
2. Glier MB, et al. *Mol Nutr Food Res*. 2014 Jan;58(1):172-82.
3. Zeisel SH. *J Am Coll Nutr*. 2000;19:528S-31S.
4. Zeisel SH, et al. *J Nutr*. 2011 Mar;141(3):531-4.
5. Ivanov A, et al. *J Am Diet Assoc*. 2009 Feb;109(2):313-8.
6. Kohlmeier M, et al. *Proc Natl Acad Sci U S A*. 2005 Nov 1;102(44):16025-30.
7. Chmurzynska A, et al. *Nutr Diet*. 2020 Jul;77(3):368-372.

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- 8. Fischer LM, et al. *Am J Clin Nutr.* 2010 Nov; 92(5): 1113–1119.
- 9. Yan J, et al. *Am J Clin Nutr.* 2012 May;95(5):1060-71.
- 10. Caudill MA, et al. *FASEB J.* 2018 Apr;32(4):2172-2180.
- 11. Guerrerio AL, et al. *Am J Clin Nutr.* 2012;95(4):892-900.

SUPPLEMENT FACTS

1 capsule, 1-2 times daily, with meals.

One (size 00) vegetarian capsules contain:

Choline (as choline bitartrate)	275 mg
Other ingredients: vegetarian capsule (cellulose, water), tri-magnesium citrate	

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Choline (bitartrate)	Quantity	Order Code
	100	CLB1

Visit PureEncapsulationsPro.com for more information about our GMO policy.

[†]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.