

# Choline

GLUTEN  
FREE

VEGETARIAN

**METABOLIC  
SUPPORT**



## Features of Choline:

- Supports healthy cell membrane structure and function
- Provides support for methylation reactions
- Supports healthy liver and gallbladder function
- Supports a healthy nervous system\*

## Adequate Intake (AI) of Choline

Adult Males	Adult Females	During Pregnancy	During Lactation <sup>1,3</sup>
<b>550</b> mg/day	<b>425</b> mg/day	<b>450</b> mg/day	<b>550</b> mg/day

## Current Total Dietary Intake of Choline in the U.S.

Data from the 2009-2014 National Health and Nutrition Examination Survey (NHANES; n = 24,774) indicated that suboptimal intakes of choline are prevalent across many life-stage subpopulations in the United States.<sup>7</sup>

Only 8.51 +/- 2.89% of pregnant women from the 2005-2014 datasets for NHANES survey met the AI for choline.<sup>8</sup> Only 10.8 +/- 0.6% of 2009-2012 NHANES participants aged >= 2 years (15.6 +/- 0.8% of males and 6.1 +/- 0.6% of females) achieved the AI for choline.<sup>8</sup>

The fact that the vast majority of the population and especially women during pregnancy are not meeting their AI is of concern considering the essential role of choline in the adult body and during the pre- and perinatal period of development.

## Bridging the Gap in Dietary Choline Intake

Choline is an essential nutrient and must be provided by our diet as our body does not make enough choline to meet requirements.<sup>1,2,3</sup> Choline plays a diverse and essential role in our body, such as:<sup>3</sup>

- Required for the synthesis of acetylcholine (a neurotransmitter)
- An integral part of cell membrane structure and signaling (phospholipids)
- Lipid transport
- Methyl-group metabolism (homocysteine reduction)

Choline is oxidized to betaine, an osmoregulator and a substrate in the betaine-homocysteine methyltransferase reaction. Both choline and betaine play a role in the one-carbon metabolism and hence a role in methylation and epigenetic regulation.<sup>3,4</sup>

Dietary choline deficiency in adult humans causes fatty liver, and may lead to liver and muscle damage<sup>1,5,6</sup> and deficiencies during development is linked to brain damage and neural tube defects.<sup>1,6</sup>

## Supplement Facts

Serving Size: 1 Tablet  
Servings per Container: 90

	Amount per Serving	%Daily Value
Choline	180 mg	33%

Ingredients: Choline bitartrate, honey, and calcium stearate.

## Available Size:

- Choline  
90 Tablets

Please consult the actual product label for the most accurate product information

## NOTES

**DOSAGE** AM

PM

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

## What are the major sources of dietary intake of choline in the US population?

Choline is found in several animal sources and some plant sources, however, a recent comprehensive study concluded that it is extremely difficult to achieve the AI for choline without consuming eggs (richest source of choline) or taking a dietary supplement.<sup>7</sup>

Consumption of animal-based products (meat, poultry, and seafood) increased choline intakes but did not result in substantial increases in percent of individuals meeting the AI. Hence, it is recommended that vegetarians, vegans, and individuals that do not consume eggs may consider choline supplementations to meet their gender and life-stage needs.<sup>7</sup>



## REFERENCES

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