

# Choline Fact Sheet

Choline is an essential nutrient to support normal cell functions and fetal development, and is of particular importance to pregnant and lactating women<sup>1</sup>.

## What are the roles of choline in human body?

- Support structural integrity and signaling functions of cell membranes<sup>1</sup>
- Maintain normal maternal homocysteine level that is associated with healthy pregnancy<sup>1,2</sup>
- Act as a precursor for the biosynthesis of acetylcholine as the neurotransmitter<sup>3</sup>
- Produce sphingomyelin as a crucial component of cell membrane<sup>3</sup>

## How much choline do we need<sup>4</sup>

Age/Life stage	Adequate Intakes (AIs) for Choline (mg/day)
Birth to 6 months	125
7–12 months	150
1–3 years	200
4–8 years	250
9–13 years	375
14–18 years	550 for males; 400 for females
19+ years	550 for males 425 for females
Pregnant women	450
Lactating women	550

## Examples of food sources of choline<sup>4</sup>

Beef liver, pan fried, 3 ounces	356
Egg, hard boiled, 1 large egg	147
Soybeans, roasted, ½ cup	107
Chicken breast, roasted, 3 ounces	72
Beef, ground, 93% lean meat, broiled, 3 ounces	72
Cod fish, cooked, dry heat, 3 ounces	71
Mushrooms, shiitake, cooked, ½ cup pieces	58
Broccoli, chopped, boiled, drained, ½ cup	31

Milligrams (mg) per serving



## The interaction of choline with other nutrients on early brain and cognitive development:

### Infants

A study revealed that higher concurrent intakes of choline (median An observational study found that higher levels of choline together with higher DHA or lutein in human milk were positively associated with better recognition memory of infants at 6 months of age<sup>5</sup>.

### School children

A study revealed that higher concurrent intakes of choline (median = 311 mg / day), together with DHA and lutein were associated with better short-term memory and general mental processing ability of schoolchildren at around 6 years old<sup>6</sup>.



**References:** 1. Zeisel SH. *Annu Rev Nutr.* 2006;26:229-250. 2. Velzing-Aarts FV et al. *Am J Clin Nutr.* 2005;81(6):1383-1389. 3. Zeisel SH et al. *FASEB J.* 1991;5(7):2093-2098. 4. National Institutes of Health Office of Dietary Supplements. Choline - Fact Sheet for Health Professionals. Available at: <https://ods.od.nih.gov/factsheets/Choline-HealthProfessional/#en2>. Accessed 23 May 2019. 5. Cheatham CL and Sheppard KW. *Nutrients.* 2015;7(11):9079-9095. 6. Mulder K et al. *Cogent Medicine.* 2016;3:1265203 [Abstract].

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