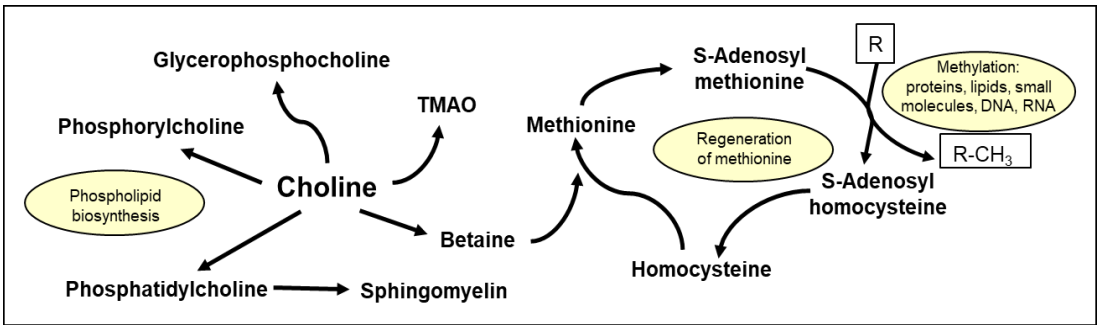
Why Measuring Choline and Related Metabolites Matters in Nutrition Research

The Nutrition Research Institute conducts quantitative targeted analysis of biospecimens (e.g., plasma, serum, urine, stool, breast milk, and seminal plasma) to determine levels of choline and choline-related metabolites (e.g., methionine, trimethyl amino oxide, betaine, phosphorylcholine, phosphatidylcholine, glycerophosphocholine, homocysteine, S-adenosylmethionine, S-adenosylhomocysteine, creatinine) that are associated with disease, dysfunction, or dietary intake.

Submit an Analysis Request: https://sph.unc.edu/norc/metabolism/

Choline is a vitamin-like compound that is an essential nutrient for humans and other animals. It is needed to synthesize phospholipids and sphingomyelin, which are necessary for the structure and integrity of cell membranes, and to produce the neurotransmitter acetylcholine, which is known to be important in nervous system function, muscle control, and brain development. It is also needed to produce the universal methyl donor, S-adenosylmethionine, and has a role in modulating gene expression, cell signaling, and lipid transport.



Low levels of choline have been associated with cognition and memory disorders, mood disorders, liver disease, pregnancy complications, fertility, and eye disease. While humans and other animals can synthesize choline, the amount produced is often not sufficient. Thus, choline must be obtained from the diet in the form of choline or choline phospholipids. Many factors influence the amount of dietary choline that individuals need, including several common genetic polymorphisms that have a substantial impact on choline metabolism and bioavailability.

Because dietary intake alone is not a good predictor of physiological choline status, direct measurement of choline (and its metabolites) in biospecimens is critical to detect and diagnosis choline deficiency.

Interested in Analysis of Choline and Related Metabolites? Contact Us.

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Recent Publications

- Hunter et al., 2021. Targeting Treatments to Health Disparities. *Schizophr Bull*. May 3;sbab051. doi: 10.1093/schbul/sbab051. PMID: 33940629.
- Wallace et al., 2020, Choline: The Neurocognitive Essential Nutrient of Interest to Obstetricians and Gynecologists. *J Diet Suppl*. 17(6):733-752. doi: 10.1080/19390211.2019.1639875. PMID: 31385730.
- Wozniak et al., 2020. Four-Year Follow-Up of a Randomized Controlled Trial of Choline for Neurodevelopment in Fetal Alcohol Spectrum Disorder. *J Neurodev Disord*. Mar 12;12(1):9. doi: 10.1186/s11689-020-09312-7. PMCID: PMC7066854.
- Trujillo-Gonzalez et al., 2020. Low Availability of Choline in Utero Disrupts Development and Function of The Retina. *J Neurodev Disord*. Mar 12;12(1):9. doi: 10.1186/s11689-020-09312-7. PMCID: PMC6662989.