

Comparison of Serum Choline and Trimethylamine N-oxide after Ingestion of Alpha Glyceryl Phosphoryl Choline and Choline Salts

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Background: Choline supplements may provide potential improvements to health outcomes and exercise performance, yet the bioavailability of choline supplements is poorly understood.

Objective: The objective of the present investigation was to examine the levels of serum Choline and Trimethylamine N-oxide (TMAO) after two doses of Alpha Glyceryl Phosphoryl Choline (A-GPC) in comparison to common choline salts.

Methods: High-dose and low-dose A-GPC along with choline salt supplements were administered to participants over the course of four weeks in a randomized, double-blind fashion. Serum levels of choline and TMAO, the

gut byproduct of choline, were examined acutely over the course of four hours and again following one week and four weeks of supplementation.

Results: High-dose A-GPC and the choline chloride supplement yielded significantly higher choline levels compared to low-dose A-GPC and choline bitartate ($F=31.31$, $p<0.01$) though the effect of time was insignificant. TMAO levels were not significantly different between supplements ($F=1.96$, $p=0.1361$) or across time ($F=0.0795$, $p=0.7795$).

Conclusion: A-GPC increases serum choline similar to that seen with high-dose choline chloride ingestion without a concomitant increase in TMAO levels and therefore, may be a desirable option as a dietary supplement.

Keywords: trimethylamine N-oxide, bioavailability, choline bitartate, choline chloride, alpha-glycerol phosphoryl choline, choline alfoscerate.