Postprandial Responses of Serum Bile Acids in Healthy Humans after Ingestion of Turmeric before Medium/High-Fat Breakfasts

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Abstract

Scope: Bile acids (BAs) are known to regulate a number of metabolic activities in the body. However, very little is known about how BAs are affected by diet. This study aims to investigate whether a single dose of turmeric-based beverage (TUR) before ingestion of medium- (MF) or high-fat (HF) breakfasts would improve the BA profile in healthy subjects.

Methods and results: Twelve healthy subjects are assigned to a randomized crossover single-blind study. The subjects receive isocaloric MF or HF breakfasts after a drink containing flavored water with or without an extract of turmeric with at least 1-week wash-out period between the treatments. Postprandial BAs are measured using protein precipitation followed by ultra-high-performance liquid chromatography-mass spectrometry analysis. The concentration of BAs is generally higher after HF than MF breakfasts. Ingestion of TUR before MF breakfast increases the serum concentrations of free and conjugated forms of cholic (CA) and ursodeoxycholic acids (UDCA), as well as the concentrations of chenodeoxycholic acid (CDCA) and its taurine-conjugated forms. However, the concentration of conjugated forms of deoxycholic acid (DCA) decreases when TUR is taken before HF breakfast.

Conclusion: TUR ingestion before MF and HF breakfasts improve BA profiles and may therefore have potential health-promoting effects on BA metabolism.

Keywords: curcumin; mass spectrometry; postprandial bile acids; turmeric; ultra-high-performance liquid chromatography.

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