

Examining the Effect of Exogenous Ketone Supplement on Indices of Peripheral Vascular Health/Function

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ABSTRACT

Cardiovascular disease (CVD) remains the leading cause of death in the US and worldwide. The risk for and prevalence of CVD are elevated by various factors including impaired micro- and macrovascular function. Associated mechanisms are multifactorial but are related to elevated oxidative stress and/or inflammation which contribute to reduced nitric oxide bioavailability and ultimately vasodilatory reactivity. Ketogenic diets, commonly used as a strategy to lose weight and improve health, have been reported to improve mitochondria function, as well as antioxidant and inflammatory status. To the best of our knowledge, the effects on vascular function are less understood. **PURPOSE:** This study tested the hypothesis that 14-days of increased daily Ketone supplementation would improve well-validated indices of peripheral micro and macrovascular function in otherwise young healthy adults. **METHODS:** Six young healthy adults (4 males; age: 22±4 yr.; BMI 24±3 kg/m²) have participated thus far. All measures were assessed at baseline and after 14-days of increased Ketone supplementation which was accomplished by adding ~13.7 g of Keto5 XOGenius powder to 16oz of water twice daily. Keto5 XOGenius contains increased levels of ketone body, e.g., β-hydroxybutyrate which have antioxidant and anti-inflammatory properties as well as neuroprotective effects. Peripheral macro and microvascular function/health were assessed before (baseline) and after Keto5 XOGenius supplementation as vasodilation in the brachial artery (flow mediated vasodilation; %FMD) and reactive hyperemia (peak mean forearm blood velocity (FBV_{mean})) in the forearm vasculature respectively following 5-min of forearm ischemia induced by suprasystolic cuff occlusion. **RESULTS:** Peripheral macrovascular function assessed as %FMD tended to be augmented following Keto5 XOGenius supplementation (Pre: 2.3±1.6% vs. Post: 3.8±1.8%, *P*=0.05). Whereas peripheral microvascular function assessed as peak FBV_{mean} was NOT different following the intervention (Pre: 67±12 cm s⁻¹ vs. Post: 66±20 cm s⁻¹, *P*=0.88). **Conclusion:** These preliminary data indicate a positive effect of Keto5 XOGenius supplementation on peripheral macrovascular function/health. Future studies will continue to expand upon these findings in a larger cohort of individuals.