

## **Impacts of MCT Oil and Caffeine on Substrate Metabolism During Submaximal Exercise**

Hayden Smith, B.S., Caroline Saros, B.S., Benjamin Louchheim, B.S., Kayla Rose, B.S.

Health and Exercise Science Department of Skidmore College

Co-Author: Stephen Ives, PhD

Recently there has been extensive research focused supplements that can increase fat oxidation during aerobic exercise, leading to muscle glycogen sparing. Caffeine and medium chain triglyceride (MCT) oil have been theorized as supplements with this potential. Purpose: The purpose of this study was to compare the effects of supplementing medium chain triglycerides (MCT) plus caffeine versus long chain triglycerides (LCT) plus caffeine substrate metabolism during submaximal exercise in males. Methods: The study consisted of 8 college-aged males aged 19-31. Each participant completed four visits to the laboratory, the first being a  $\text{VO}_2$  max and the next three being 45 mins of cycling at 55-65% of their  $\text{VO}_2$  max. One hour prior to each experimental trial the subject consumed one of three test beverages: MCT+CAF (20 mL MCT oil + 100 mg caffeine), LCT+CAF (40 mL heavy cream + 100 mg caffeine) or CAF (100 mg caffeine). RER,  $\text{VO}_2$ ,  $\text{VCO}_2$  and VE were measured throughout the trials. Results: There were no significant differences ( $p < 0.05$ ) between the MCT+CAF, LCT+CAF or CAF conditions in terms of RER, fat & carb oxidation, percent fat & carb utilization,  $\text{VO}_2$ , energy expenditure and ventilation. Conclusion: Although not significant, RER and  $\text{VO}_2$  were observed to be lowest in the MCT + CAF condition and percent fat utilization was highest in the MCT + CAF condition. These results suggest that MCT oil and caffeine supplementation may be related to increased fat oxidation and exercise economy, but more research is required to further explore these trends