

The Effects of a Thermogenic Supplement on Metabolic and Hemodynamic Variables and Subjective Mood States

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ABSTRACT

Thermogenic supplements are widely used in the general population to support attempted fat loss; however, the efficacy and safety of these supplements are questioned. **PURPOSE:** To determine whether a thermogenic supplement affects metabolic rate, hemodynamic responses, and mood states. **METHODS:** In a randomized double-blind crossover design, 23 females (22.2 ± 3.5 y; 164.8 ± 6.4 cm; 73.5 ± 6.9 kg) who were moderate caffeine consumers (<150 mg/day) reported to the lab on a 12-hour fast for baseline assessments of resting energy expenditure (REE) via indirect calorimetry, heart rate (HR), blood pressure (SBP and DBP), and hunger, satiety, and mood states. Thereafter, subjects ingested the assigned treatment (active treatment containing caffeine, micronutrients, and phytochemicals [TR] or placebo [PL]). All variables were reassessed at 30-, 60-, 120-, and 180-minutes post-ingestion. Subjects repeated the same protocol with ingestion of the opposite treatment on a separate day. All data were analyzed using a 2x5 ANOVA with repeated measures and significance was accepted *a priori* at $p<0.05$. **RESULTS:** In the TR group, mean increases in REE of 121 to 166 kcal/d were observed at 30-, 60-, and 180-minutes post-ingestion ($p<0.01$ for all). PL group mean decreases in REE of 72 to 91 kcal/d were observed at 60-, 120-, and 180-minutes ($p<0.05$ for all). Similarly, TR resulted in mean increases in expired carbon dioxide of 13 to 19 mL/min at 30- and 60-minutes ($p<0.05$ for both), and oxygen consumption increased by 12 to 24 mL/min at 30-, 60-, 120-, and 180-minutes ($p<0.05$ for all) post-ingestion. Respiratory quotient decreased at 120- and 180-minutes in both treatments. A mean decrease in HR of 5 bpm was observed at 30-minutes post-ingestion of TR ($p<0.01$). Slight increases in SBP of 3 to 4 mmHg were observed at 30-, 120-, and 180-minutes ($p<0.05$ for all) post-ingestion of TR, while no effects were observed for DBP. Observed increases in SBP were within normal blood pressure ranges. TR decreased subjective fatigue with no other significant changes in mood states. **CONCLUSION:** These findings indicate that ingestion of a specific thermogenic supplement formulation produces a sustained increase in metabolic rate and caloric expenditure and reduces fatigue over three hours without producing adverse hemodynamic responses.

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