

Effects of Capsaicin and Evodiamine Ingestion on Energy Expenditure and Fat Oxidation at Rest and After Moderately-Intense Exercise in Young Men

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ABSTRACT

Capsaicin and evodiamine are two thermogenic agents each recognized for their ability to stimulate the sympathetic nervous system and are thus found in many dietary supplements. Therefore, the purpose of this study was to observe the effects that capsaicin and evodiamine have on hemodynamics, energy expenditure, and markers of lipid oxidation while at rest and after a single bout of moderate-intensity exercise in young men. In a randomized, cross-over design, 11 men orally ingested 500 mg of capsaicin, evodiamine, or placebo while at rest after 30 minutes of resting energy expenditure assessment using open-circuit spirometry. After an additional 30 minutes of rest after supplement ingestion, resting energy expenditure was assessed again for 30 minutes. After the second resting energy expenditure assessment, treadmill exercise was performed until expending approximately 500 kilocalories (~30 minutes) at 65% peak oxygen consumption. Energy expenditure was assessed for another 30 minutes into the post-exercise period. Heart rate and blood pressure, core temperature, and venous blood samples were obtained 30 minutes before and one hour after supplement ingestion (i.e. immediately pre-exercise), and immediately after and 45 minutes post-exercise. Markers of lipid oxidation (serum glycerol, free fatty acids, serum glucose, epinephrine, and norepinephrine) were determined spectrophotometrically and with ELISA. Two-way analyses of variance (ANOVA) were performed for each dependent variable ($p \leq 0.05$). Significant main effects for Time existed for hemodynamics, energy expenditure, serum catecholamines and markers of fat oxidation immediately following exercise ($p < 0.05$). However, no significant Supplement x Time interactions were noted for any criterion variable ($p > 0.05$), suggesting no preferential difference between supplements. Neither capsaicin nor evodiamine, at a single dose of 500 mg, are effective at inducing thermogenesis and increasing fat oxidation at rest or during exercise in young men.

