

POSTER PRESENTATION

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Thermic effect of feeding: orange juice vs. a protein drink (240 kcal)

Jill Fernandes*, Christopher B Scott

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Abstract

We investigated the thermic effect of feeding (TEF) equicaloric (1004.16 kJ) portions of randomly provided fresh squeezed orange juice (17.45 oz) and Protein Rush™ (40g protein, 17 oz). Eight subjects (5 women, 3 men; 25.8 ± 9.2 yrs, 174.9 ± 12.4 cm, 71.5 ± 17.5 kg) reported to the lab on subsequent mornings and underwent 30-minutes of resting metabolic rate testing, followed by 2-minutes of drink ingestion, followed by 60-minutes of supine rest. Data were collected via a metabolic cart and ventilated hood. Resting data were subtracted from all post-ingestion measures. Within groups the rate of O_2 uptake ($l \text{ min}^{-1}$) increased significantly for protein (+29%, $p = 0.03$) but not for orange juice (+21%, $p = 0.11$); when expressed as $ml \cdot kg^{-1} \text{ min}^{-1}$, both groups had significant increases ($p < 0.005$). Between groups O_2 uptake measurements over the 1-hour period revealed a 21% difference between orange juice (2.66 ± 0.6 liters) and protein (3.36 ± 0.9 liters) that did not reach statistical significance ($p = 0.10$). Energy expenditure (kJ) determined via the respiratory exchange ratio (RER) revealed orange juice at (60.8 ± 10.1 kJ) and protein (63.7 ± 20.0 kJ) were 5% different, also non-significant ($p = 0.72$). The RER averaged over the 60-min TEF period was significantly different between orange juice (0.868 ± 0.07) and protein (0.773 ± 0.04) ($p = 0.005$). Sample size calculations indicate that 14 subjects would reveal statistical significance for O_2 uptake yet 163 subjects would be required for energy expenditure differences between drinks. We suggest the potential for bias in selecting a measure of TEF from data within- and between-groups and, O_2 uptake vs. energy expenditure.

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