

A randomized, controlled trial to assess short-term black pepper consumption on 24-hour energy expenditure and substrate utilization

Annalouise O'Connor¹, Karen D. Corbin,¹ David C. Nieman², Andrew G. Swick^{1*}

¹UNC Nutrition Research Institute, University of North Carolina Chapel Hill, North Carolina Research Campus, Kannapolis, North Carolina, USA; ²Human Performance Laboratory, Appalachian State University, North Carolina Research Campus, Kannapolis North Carolina, USA

*Corresponding author: Andrew G. Swick, ¹UNC Nutrition Research Institute, University of North Carolina Chapel Hill, North Carolina Research Campus, Kannapolis, North Carolina, USA

Submission date: August 5, 2013; Acceptance date: October 12, 2013; Publication date: October 15, 2013

ABSTRACT

Background: Thermogenic ingredients may play a role in weight management. *In vitro* and rodent work suggests that components of black pepper may impact energy expenditure, and in humans, other TPRV1 agonists e.g. capsaicin, augment EE.

Objectives: To determine the impact of BP on 24-hour EE, respiratory quotient, and biochemical markers of metabolism and satiety, a randomized, controlled, cross-over study of black pepper (0.5mg/meal) versus no pepper control was conducted in post-menopausal women. Subjects spent two 24-hour periods in a whole room indirect calorimeter.

Results: Post-meal glucose, insulin, gut peptides and catecholamines were measured. Energy expenditure, respiratory quotient, or biochemical markers assessed did not differ significantly between the black pepper and no pepper control study days.

Conclusions: Our findings do not support a role for black pepper in modulating energy expenditure in overweight postmenopausal women. Future work targeting alternative populations, administering black pepper in the fasted state, or in combination with other spices, may reveal the thermogenic effect of this spice.

Trial registration: This trial was registered at clinicaltrials.gov (NCT01729143).

Key words: Black pepper, piperine, energy expenditure, metabolic chamber