

Acute Natural Cocoa Consumption Improves Cerebral Vasodilatory Capacity in Obese Individuals

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ABSTRACT

Obesity increases the risk for cardio and cerebral vascular diseases including hypertension, coronary artery disease, and stroke. Our preliminary data indicate that obese individuals (Obese) have attenuated cerebral vasodilatory capacity compared to age / sex matched lean individuals (Lean). This study tested the hypothesis that natural cocoa (NC) consumption (13g NC, The Hershey Company) would restore cerebral vasodilatory capacity in Obese. 15 lean (BMI < 25) and 15 obese (BMI > 30) subjects underwent a rebreathing protocol while cerebral blood velocity (CBFV) was measured before and 2 hr post consumption of a NC-containing drink or a NC-free placebo (randomized order, single-blinded). Cerebral vascular conductance (CVCi) was calculated as CBFV / MAP. The response to rebreathing was expressed as % of baseline CVCi (% CVCi). Prior to beverage consumption, the range of % CVCi and the maximal increase in CVCi in response to rebreathing-induced hypercapnia was attenuated in Obese ($P < 0.01$ for both variables). NC consumption restored both variables in the Obese ($P < 0.05$ pre vs. post) while having no effect in the Lean ($P > 0.05$ pre vs. post), such that the baseline differences between groups were eliminated ($P > 0.05$). The placebo beverage had no effect on any indices of cerebral vascular function in either cohort ($P > 0.05$ for all variables). These data support the hypothesis that NC consumption can acutely augment cerebral vasodilatory capacity in Obese.

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