An Exogenous Ketone Ester Modulates Appetite but Not Dietary Intake

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Objectives: Previous research suggests exogenous ketone esters (KE) suppress appetite by directly modulating regulatory hormones; however, their impact upon eating behaviors is unknown. The authors aimed to determine if the diminished appetite resulting from KE consumption is accompanied by a reduction in dietary intake.

Methods: After informed consent participants ($n = 7$) were recruited to a randomized cross-over trial. Participants recorded their diet for three consecutive days, starting the day prior to their first study appointment. During this visit, fasted participants were randomized to consume either a KE or matched dextrose placebo (DP) beverage. Blood samples were drawn at regular intervals and analyzed for β-hydroxybutyrate (BHB), glucose, leptin and ghrelin. Appetite was self-reported using a visual analogue scale (VAS). One-week later participants were invited to a second visit where the study was repeated using the other beverage. Dietary data was analyzed using MyFood24 and statistical analysis was performed using Microsoft Excel and IBM SPSS (v.26).

Results: BHB increased 30 minutes after consuming the KE (0.21 ± 0.20 to 4.21 ± 0.66 mmol/L) ($P < 0.001$) and remained elevated. Blood glucose increased 30 minutes after consuming the DP (4.87 ± 0.42 to 8.11 ± 1.41 mmol/L) ($P < 0.001$) and promptly returned to baseline. Although there were no changes in leptin levels, those who consumed the KE demonstrated suppressed ghrelin production 120 minutes after baseline (2430.00 ± 323.46 to 1763.14 ± 367.67 pg/mL) ($P = 0.026$). Furthermore, the VAS also revealed that 120 minutes after baseline participants who consumed the DP reported a greater desire to eat (+26.86 ± 23.55 mm) ($P = 0.038$) and were less satisfied (−30.43 ± 12.52 mm) ($P = 0.003$). Despite this, there was no significant differences in the calorie intake of those who consumed the KE compared to the DP on the day before (1941.06 ± 1048.13 vs 1792.86 ± 833.23 kcal), during (1594.64 ± 677.07 vs 1536.52 ± 457.22 kcal) or after (1674.41 ± 801.43 vs 1914.35 ± 804.78 kcal) the study visits.

Conclusions: Consuming a KE, despite impacting upon self-reported measures of appetite and associated biomarkers, does not modulate dietary intake. This should be considered when assessing the potential role of KE for appetite management.

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