Attenuated gastric distress but no benefit to performance with adaptation to octanoate-rich esterified oils in well-trained male cyclists - DTU Orbit (12/12/2018)

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We investigated the effects of modifying a normal dietary fatty acid composition and ingestion of high-fat exercise supplements on gastrointestinal distress, substrate oxidation, and endurance cycling performance. Nine well-trained male cyclists completed a randomized triple-crossover comprising a 2-wk diet high in octanoate-rich esterified oil (MCFA) or twice long-chain fatty acids (LCFA). Following the diets, participants performed 3-h of cycling at 50% of peak power followed by 10 maximal sprints while ingesting either 1) a carbohydrate (CHO)+MCFA-rich oil emulsion after the 2-wk MCFA-rich dietary condition (MC-MC, Intervention) and 2) after one of the LCFA-rich dietary conditions (LC-MC, Placebo) or 3) CHO only following a LCFA-rich diet (LC-CHO, Control). During the 3-h ride MCFA-adaptation decreased octanoic-acid oxidation by 24% (90% confidence interval: 14-34%). The CHO+MCFA-rich oil emulsion reduced endogenous fat oxidation by 61% (33-89%) and 110% (89-131%) in the MC-MC and LC-MC conditions, respectively, and MCFA-adaptation reduced endogenous-carbohydrate oxidation by 10% (-3-23%). MCFA-adaptation attenuated gastrointestinal distress and nausea during the sprints, but the effect of the oil emulsion was to lower sprint power by 10.9% (7.7-14.1%) in the LC-MC condition and by 7.1% (5.7-8.5%) in the MC-MC condition, relative to the LC-CHO control, every one unit increase in nausea decreased mean power by 6.0 W (3.2-8.8 W). We conclude that despite some attenuation of endogenous-carbohydrate oxidation and gastric distress following adaptation to a MCFA-rich diet, repeat sprint performance was substantially impaired in response to the ingestion of a CHO+MCFA-rich oil emulsion.

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