

## HIGH FAT DIET IN ENDURANCE ATHLETES: THE POSTPRANDIAL RESPONSE

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One strategy to improve performance during endurance exercise is to increase the capacity to oxidize fatty acids, which can be achieved by adaptation to high fat (HF) diets. However, concerns about their health impact were issued. The postprandial (PP) metabolism plays a pivotal role in the development of diseases related to an inadequate carbohydrate or fat balance. Similar to the PP glycemia, an indirect marker of insulin sensitivity, the PP lipemia is now believed to be an accurate and independent predictor of presence or progression of atherosclerosis. **PURPOSE:** We investigated the impact of a HF diet on PP metabolism. **METHODS:** The HF diet consisted of 49 energy percent (E%) fat (15 E% saturated, 20 E% monounsaturated, and 12 E% polyunsaturated fatty acids (PUFA) with a n-6 to n-3 PUFA ratio of about 3 to 1) and lasted 4 weeks. The influence of the HF diet was assessed on the PP metabolism of male endurance-trained athletes (n=7, age=21-31 y, BMI=22±2 kg·m<sup>-2</sup>, VO<sub>2</sub>peak=62±2 mL·kg<sup>-1</sup> BM). The PP metabolism after the HF diet, composed to be isoenergetic with the basic carbohydrate-rich (29 E% fat) diet of the subjects, was compared to the PP metabolism following the basic diet. **RESULTS:** The reduction in PP lipemia after the HF diet did not reach statistical significance (p=0.16, ANOVA for repeated measures), but HDL cholesterol was significantly increased (p<0.003) and the total to HDL cholesterol ratio significantly reduced (p<0.009). PP glucose and insulin and the insulin sensitivity index QUICKI were not significantly affected by the HF diet. **CONCLUSION:** The results of the present study suggest that concerning PP lipemia and lipoprotein profile as well as an insulin sensitivity marker a 4 week long diet with about 50 E% fat is not deleterious compared to an isoenergetic diet delivering about 30 E% fat. A dietary fatty acid composition providing high amounts of PUFA, in particular n-3 PUFA, an ongoing vigorous aerobic exercise activity, and a concomitant zero energy balance might, however, be mandatory for it.