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Influence of Exercise Training and 48-hour Fasting on the Liver Triglyceride Content in Young Rats

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Abstract

The effect of exercise training and 48-hour fasting on the liver triglyceride (TG) content in male Wistar rats (n=56) was investigated. The rats were divided into four groups: 1) trained for six weeks and fasted for 48 hours, 2) trained for six weeks and fed ad libitum, 3) untrained and fasted for 48 hours, and 4) untrained and fed ad libitum. In addition, the rats in groups 1 and 3 were exercised to an acute swimming state for 120 minutes. Although the training did not affect plasma free fatty acid (FFA) and TG concentrations, it induced a significant decrease in the TG content in the liver ($p<0.01$). Fasting affected the liver TG content ($p<0.05$) and plasma FFA ($p<0.01$) and TG ($p<0.05$) concentrations in rats. In the 48h-fasting state, plasma TG values in the trained and untrained animals were unchanged by acute swimming, but the plasma FFA concentration was increased by acute exercise ($p<0.01$). Acute exercise caused a significant elevation in the liver TG content in the fasted untrained group ($p<0.05$) , But the liver TG in the fasted trained rats did noy change. In addition the TG secretion rate in the fasting state was significantly higher in the trained group than in the untrained group after acute swimming ($p<0.01$) These results suggest that exercise training decreases liver TG content, and that the TG content in the liver of the trained rats does not increase during exercise, regardless of fasting treatment.