Original Article

Effects of postexercise white chocolate intake on feeding behavior and muscle glycogen resynthesis in mice

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ABSTRACT

【Aim】
It has been reported that co-ingestion of glucose and milk stimulates insulin secretion and promotes muscle glycogen resynthesis after exercise in mice. The purpose of this study was to examine the effects of the ad libitum intake of white chocolate, the ingredients of which are similar to those of milk, on feeding behavior and muscle glycogen resynthesis after exercise in mice.

【Methods】
Male C57BL/6J mice were subjected to an acute bout of treadmill running for 30 min and were then fed sugar (Sugar group) or white chocolate (W-choco group) ad libitum during a 4-h recovery period. After the recovery period, the muscle glycogen concentration in the tibialis anterior muscle was measured. A blood sample was collected from the heart, and the serum insulin concentration was determined.

【Results】
Food intake was significantly greater in the W-choco group than in the Sugar group under ad libitum conditions, while no significant difference in carbohydrate intake was observed between the two groups. Furthermore, after the 4-h recovery period, the W-choco group had a significantly higher muscle glycogen concentration and serum insulin level, compared with the Sugar group.

【Conclusion】
These results suggest that the ad libitum intake of white chocolate may increase energy intake without suppressing appetite, and promote muscle glycogen resynthesis via, at least in part, the stimulation of insulin secretion in mice after exercise.

Keywords: white chocolate, food intake, muscle glycogen, insulin, mouse