

# Effect of different types of carbohydrate supplementation on glycogen supercompensation in rat skeletal muscle

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## Abstract

The purpose of this study was to examine the effects of glucose and sucrose supplement on glycogen accumulation in rat skeletal muscle and liver after exhaustive endurance exercise. Four- to five-week-old male Sprague-Dawley rats with an initial body weight ranging from 90 to 110 g were used for this study. All rats were trained by using a 7-day-long swimming exercise program, during which rats swam 6 h/day in two 3-h bouts separated by 45 min of rest. On the next day of the last training, all trained animals performed 240 min of swimming exercise with a weight equivalent to 3 % of their body weight to deplete muscle and liver glycogen. After glycogen-depleting exercise, rats were given a rodent chow diet plus either 5 % sucrose (SUC), 5 % glucose (GLU) or water (CON) for 6 h or 24 h. Despite equal amount of carbohydrate intake, glycogen concentration in rat epitrochlearis muscle of the GLU group rats was significantly higher compared with those observed in the CON ( $p < 0.001$ ) and the SUC groups ( $p < 0.01$ ). No significant difference in liver glycogen was observed among three groups. These results indicate that glucose supplementation rather than sucrose supplementation efficiently promotes glycogen supercompensation in rat skeletal muscle.

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