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論文名稱(中)	運動後不同升糖指數碳水化合物補充對人體骨骼肌 GLUT4 蛋白質表現之影響
論文名稱(英)	Effects of different GIs carbohydrate supplementation after exercise on GLUT4 protein expression in human skeletal muscle
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摘要(中)	<p>葡萄糖轉運子 4 號 (Glucose transporter 4, GLUT4) 為肌肉中肝醣再合成作用中的重要因子之一。研究發現，老鼠及人體骨骼肌內 GLUT4 mRNA 及蛋白質表現量會受到運動或碳水化合物補充調節。本實驗目的在探討運動後立即補充不同升糖指數 (Glycemic index, GI) 碳水化合物對 GLUT4 蛋白質表現之影響。18 名非運動員之大學生(年齡 21.3 ± 1.46 歲，身高 173.1 ± 5.33 公分，體重 70.21 ± 7.34 公斤，攝氧量峰值 43.65 ± 10.58 毫升/公斤/分鐘)，在單一次 75% 最大攝氧量峰值腳踏車運動 60 分鐘後，隨機分成 3 組，分別給予禁食、高 GI 碳水化合物及低 GI 碳水化合物三種不同試驗。運動後及運動後 3 小時各進行一次肌肉穿刺取得肌肉樣</p>

	<p>本，以西方墨點法（Western Blotting）技術定量葡萄糖轉運子的蛋白質表現，收集血液樣本測定血液中葡萄糖及胰島素的濃度。不同 GI 組血糖反應曲線下面積(Area under curve, AUC)沒有達到顯著差異，血糖及胰島素濃度 3 組間具有統計上的顯著差異，高 GI 組胰島素曲線下面積高於低 GI 組(p<0.05)。高 GI 組 GLUT4 蛋白質表現顯著高於低 GI 組及禁食組。這次結果顯示，運動後恢復期，補充高 GI 碳水化合物飲食能增加胰島素的分泌，並促進 GLUT4 蛋白質表現，推測胰島素的作用對於 GLUT4 蛋白質的表現應是調節的角色而非刺激物。</p>
<p>摘要 (英)</p>	<p>Glucose transporter subtype 4 (GLUT4) is an important factor for glycogen resynthesis in muscle. The mRNA and protein level of GLUT4 can be regulated with exercise or carbohydrate supplementation in rat and human skeletal muscle. The purpose of this study is to investigate the effect of different glycemic index (GI) carbohydrate supplementation after exercise on GLUT4 protein expression in human skeletal muscle. Eighteen untrained subjects(age 21.3±1.46 yr, height 173.1±5.33cm, weight 70.21±7.34 kg, VO₂ peak 43.65±10.58 ml/kg/min) were asked to take a single bout of cycle ergometer at 75% peak oxygen consumption for 60 minutes. Subjects were randomly assigned to one of three treatment groups after exercise: fasting, high GI carbohydrate (HGI) supplement or low GI (LGI) carbohydrate supplement. Biopsies were performed on the deep portion of the vastus lateralis muscle of all subjects immediately after exercise and 3 hours after the carbohydrate ingestion. Protein expressions of GLUT4 are showed quantitatively with Western Blotting technique. Blood samples are collected immediately after the exercise and every 30 minutes thereafter, up to 3 hours. Blood samples were collected for glucose and insulin analysis. The blood area under curve (AUC) is not different between HGI and LGI groups. Concentrations of blood glucose and insulin are significant different from three groups (p</p>
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