β-胡蘿蔔素抑制長期攝食酒精之大白鼠肝臟脂肪堆積

b-carotene prevents hepatic lipid accumulation in rats under chronic alcohol consumption

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摘要

本實驗之目的在探討自β-胡蘿蔔素對於長期攝取酒精所導致大白鼠高三酸甘油酯血症以及酒精性脂肪肝之影響。以雄性 SD 大白鼠為實驗動物，依肝功能指標 GOT 興 GPT 活性分成三組：控制組、酒精組以及β-胡蘿蔔素添加酒精組，實驗期 10 週。結果顯示：血漿中 GOT 與 GPT 活性方面，酒精組在第 6、8、10 週時均顯著較控制組上升，而β-胡蘿蔔素添加酒精組在第 10 週時則是均顯著較酒精組降低。血漿中總膽固醇濃度方面，酒精組在第 10 適時明顯較其他二組減少。血漿中三酸甘油酯濃度方面，酒精組則是在第 4、6、8、10 週時明顯較其他二組增加。此外，β-胡蘿蔔素添加酒精組，血漿中高密度脂蛋白膽固醇濃度在第 10 週時顯著較酒精組增加 13%。至於肝中膽固醇與三酸甘油酯含量方面，酒精組較控制組分別增加 33%與 73%，而β-胡蘿蔔素添加酒精組則是分別較酒精組減少 20%及 38%。另外，β-胡蘿蔔素添加酒精組大白鼠肝臟中可測得β胡蘿蔔素，而且β-胡蘿蔔素添加酒精組肝臟中維生素 A 之含量分別較控制組與酒精組增加 33%與 51%。由肝臟組織病理切片觀察顯示，酒精組大白鼠肝臟中有脂質堆積的現象，而β-胡蘿蔔素添加酒精組大白鼠則無此現象。由以上結果可知，補充β-胡蘿蔔素可以減少血漿中三酸甘油酯濃度，以及肝臟中膽固醇與三酸甘油酯之含量，進而預防酒精性脂肪肝之形成。

Abstract

The purpose of this study was to investigate the effects of β-carotene on hypertriglycemia and alcoholic fatty liver in rats with chronic alcohol intake. Rats were divided into three groups: the control (c), ethanol (E), and ethanol with β-carotene (E + B) groups. After 10 weeks, results revealed that plasma GOT and GPT activities in group E were significantly higher than those in group C at weeks 6, 8, and 10, but they were significantly lower in group E + B compared to group E at week 10. Plasma total cholesterol (TC) levels in group E were significantly lower than those in the other groups at week 10. When compared to the plasma triglyceride (TG) concentration in group E, those of groups C and E + B were significantly lower at weeks 4, 6, 8, and 10. Furthermore, plasma HDL-C levels in group E + B were significantly higher, by 13 %, than those in group E at week 10. On the other hand, the hepatic cholesterol and TG contents of group E were significantly higher, by 33% and 73%, respectively, than those in C group. However, hepatic

cholesterol and TG contents in group E + B were significantly lower by 20% and 38%, respectively, compared to those in group E. β-carotene storage was detected in livers of E + B group, and the hepatic retinal content was significantly higher than those in groups C and E by 33% and 51 %, respectively. Furthermore, the apparent accumulation of fat within hepatocytes was observed in the ethanol group. Results demonstrate that β-carotene supplementation can prevent alcoholic fatty liver formation by decreasing the plasma TG concentration, and inhibiting the accumulation of cholesterol and TG contents in the liver.