餵飼不同量白木耳在高膽固醇攝取上對大白鼠脂質代謝及腸道生理之影響

Lipid metabolism and intestinal physiology in rats affetcted by feeding high cholesterol diets containing defferent amounts of Tremella fuciformis Berk

中文摘要

本研究乃欲探討在有高膽固醇飲食條件下，攝取不同量的白木耳膳食纖維及添加抗生 素(Nebacitin)對大白鼠脂質代謝及腸道生理的影響。42 隻 Wistar 品系雄鼠(重約 260g) ，隨機分為六組,每組飼料中均添加 1% 膽固醇及 0.2% 膽酸，並以添加或不添加抗生素[0.7g Nebacitin(bacitracin:neomycin sulfate=2:1,w/w)/100g dry matter] 、白木耳膳 食纖維量(0%、5% 或 10%)作 2×3 factorial 之實驗設計，實驗期四週，分析血清及肝 臟中脂質濃度，血清及盲腸內容物短鏈脂肪酸濃度，以及糞便中總中性固醇, 總膽酸的含 量。實驗結果顯示添加抗生素組之大白鼠，其血清及盲腸內容物短鏈脂肪酸濃度顯著低於不添加抗生素組,但血清及肝臟膽固醇濃度沒有影響，而盲腸、結腸、直腸重，及其內容 物重亦顯著增加。和 0% 白木耳膳食纖維組比較，不論有無添加抗生素，增加白木耳膳食 纖維之攝取顯著降低肝臟之總膽固醇及三酸甘油酯濃度，並且顯著增加糞便中總中性固醇 與總膽酸的排出量，以及盲腸、結腸、直腸及其各內容物重。而 10% 白木耳膳食纖維組 在不添加抗生素下，可顯著降低血清中低密度脂蛋白膽固醇濃度，增加小腸長度及小腸黏 膜重。增加白木耳膳食纖維攝取時，降低血清低密度脂蛋白膽固醇及肝臟膽固醇濃度，可 能是與增加糞便總膽酸及中性固醇排出有關，而不是藉由短鏈脂肪酸的作用；白木耳膳食 纖維亦會改變腸道生理。

英文摘要

The purpose of this study was to investigate the effect of different doses o f dietary fiber of Tremella fuciformis Berk (TFB) on lipid metabolism and inte stinal physiology in rats fed diets containing 1% cholesterol and 0.2% cholica cid. Forty-two male Wistar rats were randomly divided into six groups in a 2× 3 factorial design and were fed diets containing different doses (0%、5% or 10 %) of dietary fiber of TFB, with and without antibiotics [0.7g/100g of Nebaci tin (bacitracin:

neomycin sulfate = 2:1,w/w) for 4 weeks. The parameters analyzed included liver and serum lipid concentration , serum and caecal content of short chain fatty acids ,fecal neutral steroids and total bile acids content.T he results showed that rats fed the diet with antibiotics had lower levels ofs hort chain fatty acids in serum and caecal content than rats fed diet withouta ntibiotics. Antibiotics had no effect on serum and liver cholesterol comparedt o diet without antibiotics. Weight of cecum and colon-rectum and their content were significantly higher in rats consuming the diet with antibiotics thanwith out antibiotics. Ingestion of increasing amounts of dietary fiber of TFBin die t with or without antibiotics, rat had lower liver cholesterol andtriglyceride concentrations, higher fecal neutral steroids and total bile acidsexcretion, higher weights of cecum and colon-rectum and their contents thanrats fed the d ietary fiber free of TFB. Serum LDL-cholesterol concentrationwas lower, and th e length and mucosal weight of small intestine were largerin rats fed 10% diet ary fiber of TFB without antibiotics.The dose-responsereiationship in rat mode l showed that dietary fiber of TFB reduced serumLDL-cholesterol and liver chol esterol levels in rats.The hypocholesterolemic effect of dietary fiber of TFB may be mediated by the increase of excretionof fecal neutral steroids and tota l bile acids, but not by the effect of short chain fatty acids. The study suggests that intake of dietary fiber of TFB altered intestinal physiology, also.