綠藻對於餵食高油脂高膽固醇飼料之大白鼠脂質代謝的影響

The Effects of Chlorella on Lipid Metabolism in Rats Fed with High Fat and High Cholesterol Diet

楊素卿;黃娣儀;黃啓彰;謝明哲;邱琬淳;鄭建睿;陳俊榮

摘要

本實驗之目的在探討高油脂、高膽固醇飲食條件下綠藻對大白鼠體內脂質代謝的影響。將 40 隻 Wistar 系大白鼠分爲對照組、AD0、AD1、AD5 以及 AD10 等 5 組。以正常飼料（大豆油 5%）飼養對照組，而以高油脂（大豆油 15%）、高膽固醇（膽固醇 1%）同時添加 0%、1%、5%或 10%綠藻粉之飼料飼養 AD0、AD1、AD5 以及 AD10 組。實驗期爲八週。結果顯示：在 TC 和 LDL-C 濃度方面與 AD0 組比較之下，AD1 組在第 4、6、8 週時顯著較低，而 AD10 組在第 6 週時顯著較低。在 TG 濃度方面與 AD0 組比較之下 AD1、AD5 和 AD10 組在第 2、4、6、8 週時皆明顯較低。在 HDL-C 濃度方面與 AD0 組比較之下 AD1、AD5 和 AD10 組在第 2、4、6、8 週時皆明顯較高。另外，肝中的 TC 與 AD0 組比較之下，AD1、AD5、AD10 組各降低 30%、68%、77%，而肝中的 TG 與 AD0 組比較之下，各綠藻添加組則各降低 50%、67%、68%。與 AD0 組比較時，AD1 以及 AD10 組之糞便膽固醇量和膽酸量則明顯降低。

Abstract

The purpose of this study was to investigate the effects of chlorella on the lipid metabolism of rats fed with a high fat and high cholesterol diet. Forty Wistar rats were divided into five groups (control, AD0, AD1, AD5 and AD10). In the control group, rats were fed normal diets (5% soybean oil). In the AD0, AD1, AD5 and AD10 groups, rats were fed with high fat and high cholesterol diets (15% soybean oil and 1% cholesterol) containing 0%, 1%, 5% and 10% chlorella, respectively. The experimental period was 8 weeks. The results showed that the total plasma cholesterol (TC) and low density lipoprotein-cholesterol(LDL-C) levels were significantly lower in the AD1 group at weeks 4, 6 and 8, and in the AD10 group at weeks 6 than in the AD0 group. Furthermore, triglyceride (TG) levels were significantly lower in the AD1, AD5 and AD10 than in AD0 group throughout the experimental period. The high density lipoprotein-cholesterol (HDL-C) levels were significantly higher in the AD1, AD5 and AD10 groups than in the AD0 group. When compared to the AD0 group, the liver TC content in the AD1, AD5 and AD10 groups were significantly decreased by 30%、68%、77%, and the TG levels were

decreased by 50%、67%、68%, respectively. However, the fecal cholesterol and bile acid levels were significantly decreased in the AD1 and AD10 groups than in the AD0 and AD5groups.