

Comparison of cardiovascular protective effects of tropical seaweeds, *kappaphycus alvarezii*, *caulerpa lentillifera*, and *sargassum polycystum*, on high-cholesterol/high-fat diet in rats

Abstract

This study was designed to investigate the comparative in vivo cardiovascular protective effects of red, green, and brown tropical seaweeds, namely, *Kappaphycus alvarezii* (or *Eucheuma cottonii*), *Caulerpa lentillifera*, and *Sargassum polycystum*, in rats fed on high-cholesterol/high-fat (HCF) diets. Male Sprague-Dawley rats (weighing 260-300 g) on the HCF diet had significantly increased body weight, plasma total cholesterol (TC), plasma low-density lipoprotein cholesterol (LDL-C), plasma triglycerides (TG), lipid peroxidation, and erythrocyte glutathione peroxidase (GSH-Px) and superoxide dismutase levels after 16 weeks. Supplementing 5% seaweeds to HCF diet significantly reduced plasma TC (-11.4% to -18.5%), LDL-C (-22% to -49.3%), and TG (-33.7% to -36.1%) levels and significantly increased HDL-C levels (16.3-55%). Among the seaweeds, *S. polycystum* showed the best anti-obesity and blood GSH-Px properties, *K. alvarezii* showed the best antihyperlipemic and in vivo antioxidation effects, and *C. lentillifera* was most effective at reducing plasma TC. All seaweeds significantly reduced body weight gain, erythrocyte GSH-Px, and plasma lipid peroxidation of HCF diet rats towards the values of normal rats. © Mary Ann Liebert, Inc.