

Effect of phlorotannins isolated from Ecklonia cava on melanogenesis and their protective effect against photo-oxidative stress induced by UV-B radiation.

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Abstract

In the present study, three kinds of phlorotannins, marine algal polyphenol, were isolated from a brown alga *Ecklonia cava*, and their inhibitory effect on melanogenesis as well as the protective effect against photo-oxidative stress induced by UV-B radiation was investigated. The effect on melanogenesis was evaluated via the inhibitory effects of tyrosinase and melanin synthesis. Among the phlorotannins, dieckol showed higher effect than that of the other phlorotannins in the both assays; especially the value of dieckol in the tyrosinase inhibition assay was relatively higher than that of a commercial tyrosinase inhibitor (kojic acid). The UV-B protection effect was evaluated via DCFH-DA, MTT, comet assays, and morphological changes in fibroblast. Intracellular ROS induced by UV-B radiation was reduced by the addition of phlorotannins and cell viability was dose-dependently increased. Moreover, dieckol demonstrated strong protective properties against UV-B radiation-induced DNA damage via damaged tail intensity and morphological changes in fibroblast. Hence, these results indicated that dieckol isolated from *E. cava* has potential whitening effects and prominent protective effects on UV-B radiation-induced cell damages, which might be used in pharmaceutical and cosmeceutical industries.