

Anti-melanogenic effect of fucoidan from *Fucus vesiculosus*, and elucidation of mode of action

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Fucoidan, a sulfated polysaccharide mainly extracted from brown seaweed, having a wide variety of biological activity, i.e. anti-viral, anti-oxidant, anti-coagulant and anti-tumor, etc.... We have explored this polymer as anti-melaninogenic and a significant reduction in melanin was observed in melan-a cell when treated with fucoidan. It was found that the fucoidan can minimize the melanin production in In vitro. The cellular and molecular mechanism of fucoidan mediated anti-melanogenic activity remains poorly understood. In the present study, we have tried to evaluate the effect of fucoidan on major pathways of melanin synthesis. The results showed that the concentration up to 100  $\mu\text{g/ml}$ , was found to be nontoxic to the melan-a melanocyte cell. The cells treated by fucoidan showed around 30% decrease in cellular tyrosinase activity. It is well known that melanin synthesis involves a series of reaction catalyzed by specific gene product. Therefore, in this study had evaluated the expression alteration of various key enzymes, like TYR, TRP-1, TRP-2, MITF, ERK, CREB etc. These present studies are important in terms of design and develop a fucoidan based cosmetics, and we anticipate this will be safer too.