

Extraction, anti-tyrosinase, and antioxidant activities of the collagen hydrolysate derived from *Rhopilema hispidum*

ABSTRACT

The study was conducted to determine anti-tyrosinase and antioxidant activities of the extracted collagen hydrolysate (CH) derived from Malaysian jellyfish, *Rhopilema hispidum*. Collagen was extracted using 1:1 (w:v) 0.1 M NaOH solution at temperature 25 °C for 48 hr followed by treatment of 1:2 (w:v) distilled water for another 24 hr and freeze-dried. The extracted collagen was hydrolyzed using papain at optimum temperature, pH and enzyme/substrate ratio [E/S] of 60 °C, 7.0 and 1:50, respectively. CH was found to exhibit tyrosinase inhibitory activity, DPPH radical scavenging and metal ion-chelating assays up to 64, 28, and 83%, respectively, after 8 hr of hydrolysis process. The molecular weight of CH was found <10 kDa consisting of mainly Gly (19.219%), Glu (10.428%), and Arg (8.848%). The UV-visible spectrum analysis showed a major and minor peak at 218 and 276 nm, accordingly. The FTIR spectroscopy confirmed the amide groups in CH. The SEM images demonstrated spongy and porous structure of CH. In the cytotoxicity study, CH has no cytotoxicity against mouse embryonic 3T3 fibroblast cell line with IC50 value >500 µg/ml. Results revealed that the CH generated from this study has a potential to be developed as active ingredient in cosmeceutical application.

Keyword: Antioxidant; Anti-tyrosinase; Collagen hydrolysate (CH); DPPH