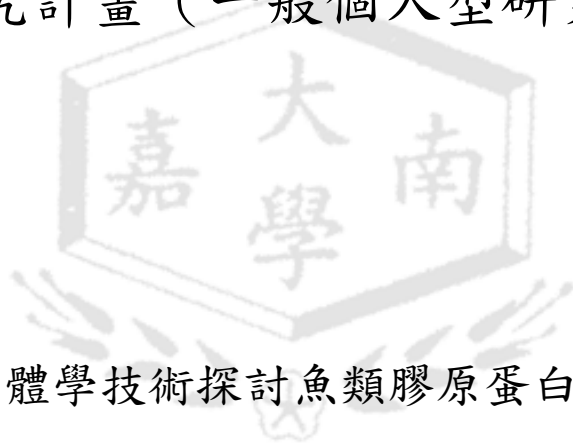


嘉南藥理科技大學九十九學年度

校內教師研究計畫（一般個人型研究）成果報告



計畫名稱：蛋白體學技術探討魚類膠原蛋白引起之過敏機制

計畫主持人：呂雅蕙 助理教授

執行單位：生活應用與保健系

執行期間：99.7.1~99.12.31

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摘要 (Abstract)

Introduction: Hagfish is the most primitive non-jaw vertebrate which in Taiwan for bottom trawling fisheries. Collagen, a well-established biomaterial, can be created from seafood processing byproducts such as fish skin, bone and scales.

Purpose: The objectives of this study are to investigate the proximate composition, collagen extraction, characteristics, amino acid constituents and their antioxidant activities of enzymatic hydrolysates from hagfish (*E. burgeri* and *E. okinoseanus*) skin.

Methods: The acid soluble collagen (ASC) were identified as Type I collagen by SDS-PAGE analysis. The amino acid compositions and thermal denaturation temperature of collagen were conducted by amino acid analyzer and rheometer, respectively. The antioxidant activities were consisted of scavenging effect of α, α -diphenyl- β -picrylhydrazyl (DPPH) radical, reducing power and scavenging effect on 2,2'-azinobis-3-ethylbenzothiazoline-6-sulfonic acid (ABTS+).

Results: The yield of acid soluble collagen (ASC) extracted from *E. burgeri* and *E. okinoseanus* skin was 39 and 37%, respectively. The main amino acids of collagen were Gly, Ala and Pro. A dramatic decrease in solubility was observed in the presence of NaCl above 3% and 2% (w/v), and denaturation temperatures were at 21 and 15°C for *E. burgeri* and *E. okinoseanus*, respectively. Two skin collagen from *E. burgeri* and *E. okinoseanus* possessed similar antioxidant activities including the scavenging effect on DPPH radical and ABTS+, reducing power, but the former had a higher chelating capability of ferrous ion than the latter. The amino group of ASC increased during hydrolysis with protamex and alcalase, of which the *E. okinoseanus* skin ASC hydrolysate with alcalase had the highest amount of amino group. The ASC from *E. okinoseanus* skin with alcalase had the best scavenging ability on DPPH radical.

Significance: These data suggest that enzymatic hydrolysates from hagfish skin, the processing byproduct derived from fish, possess good antioxidant ability and provide a potential resource for hypoallergenic collagen product.