EFFECT OF EXTRACTION METHODS AND TIME ON THE QUALITY OF GELATIN EXTRACTED FROM RED STINGRAY FISH (*Dasyatis akajei*) SKIN

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This Final Year Project Report entitled "**Effect of extraction methods and time on the quality of gelatin extracted from red stingray fish (*Dasyatis akajei*) skin**" was submitted by Nur Fitriah Hani Binti Zazali, in partial fulfillment of the requirements for the Degree of Bachelor of Science (Hons.) Science and Food Technology, in the Faculty of Applied Science, and was approved by

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ABSTRACT

EFFECT OF EXTRACTION METHODS AND TIME ON THE QUALITY OF GELATIN EXTRACTED FROM RED STINGRAY FISH (*Dasyatis akajei*) SKIN

This study was conducted to investigate the effects of different extraction method and time on the physicochemical properties of red stingray fish skins (*Dasyatis akajei*) gelatin. The extracted gelatin was compared with the commercial gelatin. Gelatin from the skin of red stingray fish (*Dasyatis akajei*) were pre treated with 0.1 M NaOH and 0.2 M acetic acid. The gelatin were extracted at 4 and 8 hrs using either hot water (50°C) or alcalase at enzyme substrate ratio (E/S) of 3%. The extract was dried using in a freeze-drier and ground to obtained powdered gelatin. The gelatin were analyzed for color, crude protein content, solubility, gel strength, texture profile analysis, melting point, setting point, viscosity and viscoelastic properties and was compared with commercial gelatin. Longer extraction times resulted in gelatin with higher yield (0.07%) when extracted using hot water (50°C). However, fish skin gelatin extracted with alcalase had lower yield (0.03%) and lightness value (48.24) when the extraction time increased. Increasing extraction time for both extraction methods increased in lightness (L*), the greenness (a*) and yellowness (b*) value, protein content, solubility, hardness, gumminess, chewiness, viscosity and the storage modulus values (G'). Alcalase extraction showed higher values on the lightness, protein content, solubility, gel strength, gumminess and chewiness at 4 and 8 hrs. However, lower values on a*, b*, lightness and cohesiveness were obtained. Gelatin extracted at 8 hrs using alcalase showed higher crude protein content (74.33%), solubility (47.71%), gel strength (381.49%), viscosity (0.111-13.7 Pa.s), hardness (2827 g), melting point (33.23 %) and setting point (19.74%) properties with high gel strength and viscosity that were close to the commercial gelatin. Hence, 8 hrs extraction time using alcalase is more suitable to be used in production gelatin from red stingray fish skin than at 4 hrs extraction time and hot water (50°C) extraction method.