

Extraction of Crude Protein from *Hilsa kelee* and Determination of its functional properties

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Karattaya (*Hilsa kelee*) is a marine pelagic species. *H. kelee* is a seasonal fish species and has high catch from April to September. However, it does not have a high market demand due to its bony structure and sharp tough bones which make it hard to eat. Due to that, it generates a large quantity of waste and currently used only in the production of fish meal. Therefore, the objective of this study was to develop a simple nontoxic method for extracting crude protein from *H. kelee* and to determine the functional properties of the extract. Collected fish samples were blended and treated with 04 different ratios as a sample: distilled water 1:1, 1:2, 1:3 and 1:4 to separate sarcoplasmic proteins followed with salt extraction with 5%, 10%, 15% and 20% (w/v) concentrated NaCl at 1:10 ratio to separate myofibrillar proteins separately. Crude extraction was lyophilized and selected the best ratio and concentrate by using the yield and SDS-PAGE analysis. Antimicrobial properties, antioxidant properties, and metal chelating properties of selected extracted crude protein were determined. All treatments were replicated (n=3). *H. kelee* contained moisture, ash, crude protein $67.39 \pm 2.23\%$, $5.07 \pm 0.92\%$ and $20.38 \pm 2.38\%$, respectively. In yield analysis of water extraction 1:4 ratio showed the highest yield compared to other treatments ($p < 0.05$). In salt extraction, there was no significant difference between yields ($p > 0.05$), therefore 5% (w/v) was selected as the best sample for further experiment. Antioxidant activities of extracted Fish Protein Concentrates (FPC) were higher in the salt extracted sample than the water extracted sample ($p < 0.05$). FPC had a negative response to the Fe²⁺ chelating activity. No inhibition was observed against *E. coli* and Total Plate Count (TPC) up to 20,000 ppm concentration in all FPC. It concludes that extracted FPC contains strong antioxidant properties. However, they do not exhibit Fe²⁺ chelating properties and antimicrobial properties.

Keywords: Hilsa kelee, Fish Protein Concentrate, Extraction, Antioxidant property