

Functional Properties of Hydrolysates of Bioactive Peptides Extracted from Water Soluble Crude Protein from *Hilsa kelee*

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Hilsa kelee also known as “Karattaya” is a marine pelagic, seasonal fish species which has a high catch during April to September. It is mainly used to produce fish meal and used as baits even though it has high nutrients. In addition, it has a low market value and a demand due to its bony structure leading to high wastage and production of fish protein hydrolysates (FPH) can be an alternative. 20 mg/ml concentrated water-soluble crude protein extractions were mixed with Protease from *Bacillus licheniformis* (60°C, pH 6.5-8.5), Papain from papaya latex (65°C, pH 5.8-7.0), α -chymotrypsin from bovine pancreas (50°C, pH 7.8) and Elastase from porcine pancreas (37°C, pH 7.8-8.5) separately in 1:100 (enzyme: substrate) ratios. Each sample was incubated at different time intervals (0, 3, 6, 9, 12 and 24 hr) in predetermined optimum pH and temperatures. Then, 15% SDS-PAGE was used to determine the best hydrolysis condition. Bulk hydrolysates were prepared with Papain-6 h, Protease-3 h, α -chymotrypsin-3 h, Elastase-6 h followed with heat inactivation at 100°C for 15 minutes for further experiments. Then, TBARS assay, Ferrous chelation activity and antibacterial activities by agar well diffusion method was conducted. All treatments were triplicated (n=3). According to the results obtained from TBARS assay, FPHs from papain showed the highest antioxidant properties (5.84±0.05 MDA mg/L) compared to other treatments (p>0.05). Fe (II) chelation activity analysis revealed the FPHs produced from α -chymotrypsin showed the highest chelation (20.81±0.02%) (p<0.05). None of the hydrolysates showed any antimicrobial activities for tested microorganisms up to 20,000 ppm. Thus, FPHs produced using papain for 6 h followed with heat inactivation at 100°C for 15 minutes contain strong antioxidant activity

Keywords: *Hilsa kelee*; Fish Protein Hydrolysates (FPH); Antioxidant; Metal Chelating; Antibacterial activity