

**ANALYSIS OF FUNCTIONAL PROPERTIES OF  
FISH PROTEIN HYDROLYSATES FROM  
*Scomber japonicus* CANNED FISH PROCESSING  
FIN WASTAGE**

A dissertation submitted to the  
Faculty of Animal Science and Export Agriculture  
Uva Wellassa University  
in partial fulfillment of the requirement of  
the degree of  
Bachelor of Science in Aquatic Resources Technology

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**2018**

## ABSTRACT

Pacific chub mackerel (*Scomber japonicus*) is a salience fish species which highly utilized in canned fish processing. In production, around 30% of raw fishes are discarded as wastes which leads to economic losses and environmental pollution. Hence, production of Fish Protein Hydrolysates (FPH) utilizing fish wastes, which contains bioactive compounds may be an ideal remedy. In this study *Scomber japonicus* canned fish processing fin wastage was collected and blended. Aqueous extracts of Fish Protein Concentrates (FPC) were produced with 04 different ratios as sample: distilled water, 1:1, 1:2, 1:3 and 1:4. Crude extraction was observed using 10% SDS-PAGE. Extracted FPCs were hydrolyzed using Papain, Pepsin, Trypsin and Protease enzymes (1:100) under 37<sup>0</sup>C with their optimum pH conditions for 0, 3, 6, 9, 12 and 24 hours followed by heat inactivation at 100<sup>0</sup>C for 15 minutes. Hydrolyzed samples were lyophilized and observed for antioxidant activities by TBARS and DPPH scavenging assay, metal chelation activity by Fe (II) chelating activity and antibacterial activities by agar well diffusion method. According to the observations there was no significant difference between the 04 ratios in yield ( $p>0.05$ ). So 1:1 ratio was selected with periods as Papain-24 h, Pepsin-3 h, Trypsin-3 h, Protease-0 h for further experiments. According to the results obtained from TBARS assay, none of the FPHs showed antioxidant properties ( $p<0.05$ ), instead all demonstrated high oxidative activity. However DPPH scavenging assay showed significant difference among the treatments ( $p<0.05$ ). Results obtained by Fe (II) chelation activity analysis revealed that the produced FPHs show Fe(II) releasing activity instead of chelation (1.84, 13.99, 16.48, 1.84%), while FPHs produced according to standard protocol showed a slight chelating activity (0.73%). Further, the results of antibacterial activity against *E.coli* and *Salmonella* spp. was highly positive in all four types of hydrolysates and the best activity against both strains was demonstrated by Trypsin hydrolysate. This concludes the FPHs produced using aqueous extracts of *Scomber japonicus* contain strong antibacterial activity, though they do not contain strong antioxidant activity and they have iron releasing properties.

Keywords: Fish Protein Hydrolysates (FPH), Enzymes Treatment, Antioxidant, Metal Chelating, Antibacterial