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INFLUENCE OF WHEY PROTEIN ISOLATE COATING ENRICHED WITH THYME OIL DURING FROZEN STORAGE OF HORSE MACKEREL (*TRACHURUS TRACHURUS*)

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The effectiveness of WPI and WPI enriched thyme oil coating to improve the quality of horse mackerel during frozen storage at -18°C were evaluated for nine month. Whey protein isolate without thyme oil (WPI0) and three different proportion thyme oil (3, 5 and 7%, v/v) in whey protein isolate (WPI3, WPI5 and WPI7) coating solutions were applied to horse mackerel. The coatings were applied after quick-freezing. Non-coated as a control and distillated water coating (DW) horse mackerel were also used. The results showed that the lowest peroxide value (PV) and thiobarbutiric acid value (TBA) were determined in WPI coatings enriched with 3% thyme oil treated group ($p<0.05$) while the highest PV and TBA values were determined in WPI coatings enriched with 5% and 7% thyme oil treated groups ($p<0.05$). Among the treatment, DW and the WPI coatings enriched with 7% thyme oil gived significantly higher protein solubility than other treatments during frozen storage ($p<0.05$). Electrophoretic studies in the presence and absence of β-mercaptoethanol showed that high molecular weight polymers via non-disulfide and disulfide cross-linking occurred in the horse mackerel proteins extracted in 5% NaCL in all groups during frozen storage. Sensory assessment showed that the horse mackerel coated WPI enriched with 5 and 7% thyme oil could not be stored for more than 9 month.

Keywords: Whey protein isolate, edible coating, thyme oil, frozen fish

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