

## ABSTRACT

Increased incidence of Non communicable diseases (NCD) such as cardiovascular diseases, diabetes and cancer has been associated with decreased consumption of polyunsaturated fatty acids (PUFAs) of the omega-3 series, especially very long chain eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA). These fatty acids are majorly found in fish and fish by-products. Nile perch (*Lates niloticus*) is one of the fish that dominates the commercial fish market in Eastern Africa and its processing results in generation of large amounts of by-products which are of high nutritional content. The utilization of these by-products in the production of fish oils that are rich in Omega-3 fatty acids is an important clean production opportunity for the fish processing industry. This potentially generates additional revenue, reduces disposal costs of these materials and eliminates or reduces the environmental and health impacts of waste disposal.

This study aimed to develop functional yoghurts; YFH (yoghurt fortified with Omega-3 rich Nile perch fish oil and honey) and YFL (yoghurt fortified with Omega-3 rich Nile perch fish oil and lemon juice) and to evaluate their shelf life properties. Liberation of fish oil from Nile perch fat pads was done using a food grade enzyme Alcalase and in the absence of an enzyme. Characterization of the fish oil was done by thin layer chromatography and the quality parameters; PV (peroxide value), AV (anisidine value), TOTOX (total oxidation) and FFA (free fatty acids content) determined. Three honey samples and three citrus fruits were analyzed for their antioxidant activity and in either case; the honey and citrus fruit with the highest antioxidant activity were used in development of the functional yoghurt. Four batches of yoghurt were produced, YFH, YFL, PY (plain yoghurt) and YF (yoghurt fortified with Omega-3 rich Nile perch fish oil only) where the latter two (PY and YF) were used as controls. Yoghurt

