

**DEVELOPMENT OF AN OMEGA 3 ENRICHED INSTANT SOUP POWDER FROM
SARDINELLA LONGICEPS**
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ABSTRACT

“Indian Oil Sardine” or *Sardinella longiceps* is an abundantly caught small pelagic fish of commercial importance in the fisheries industry of Sri Lanka. Being considered as an omega-3 rich fish, effects of cooking on its fatty acid profiles (Gas chromatography- mass spectroscopy) were studied in comparison with that of raw fish. Omega 3 polyunsaturated fatty acid (PUFA) content of raw fish was 21.54% (of total fatty acids). Cooking has decreased the value down to 14.23% and 2.83%, respectively in boiled and fried fish. Development of a value added food product was designed by incorporating fish powder and fish oil derived from *Sardinella longiceps* along with corn flour (as the basis), tomato powder, milk powder, spices, salt and dehydrated vegetables. The developed Instant soup powder contained 9.31% (of total fatty acids) of Omega-3 PUFA, which is significantly higher than that of fried fish. It can provide 0.6 g of Eicosapentaenoic acid (EPA) and 1.9 g of Docosahexaenoic acid (DHA) per serving which are higher than the recommended daily minimum intake. As a whole or a part of a meal, an instant soup enriched with Omega 3 can be more nutritious and a convenient way to elevate the Omega 3 intake.

KEYWORDS: *Sardinella longiceps*, Omega-3 PUFA, EPA, DHA, soup.

INTRODUCTION

Coastal pelagic fisheries have a higher consideration as the backbone of the fishing industry in Sri Lanka, which contributes about 26% of the total fish production in the country [1]. “Indian Oil Sardine” or *Sardinella longiceps* is a small pelagic fish which is harvested abundantly and commercially available throughout the year. Although post harvest loss in Sri Lankan fishery is considerably high; and this particular fish species is easily affordable with its low cost, still there is no evidence of utilizing it in a possible value added food product efficiently. Processing of low cost fish species into value added food products is one of the most important food processing technologies.

Fatty or oily fish comprising of small pelagic fish such as herring, sardines, anchovies and large pelagic fish such as mackerel, salmon, have oil in their flesh and the belly cavity around the gut. Considering fish fats, most small pelagic fish including Sardines contain around 30% of omega-3 polyunsaturated fatty acids in their total fatty acids profile [2]. The major fatty acids among omega 3 long chain polyunsaturated fatty acids are Eicosapentaenoic acid (EPA; C20:5) and Docosahexaenoic acid (DHA; C22:6) contributing a very high proportion (nearly 85%) to the total n-3 PUFAs. [2][3]. EPA and DHA are synthesized from Alpha Linolenic acid (ALA) and other fatty acids in the omega-3 pathway [4]. But only a minor quantity of the beneficial ω -3 PUFAs (EPA and DHA) are synthesized in humans, since excess dietary Omega-6 fatty acids associated with a high consumption of vegetable oils may compete with omega-3 for metabolization in the body [5]. Regular consumption of omega 3 rich diets with appropriate content of EPA and DHA can prevent hypertension, cardiovascular diseases, type 2 diabetes, rheumatoid arthritis, Crohn’s disease and reduce the risk of Dementia, Alzheimer’s diseases, obesity, thrombosis, lung disease, cancer including colon, breast and prostate and some other diseases. And also omega 3 PUFAs can improve the development and functioning of the brain, retina and testis [6]-[9].

Cooking and preservation techniques could probably cause modifications in fatty acids composition due to the possible oxidation. [10]-[11]. However, still there are no clear and adequate records on the effect of cooking on fatty acid profile and quality of fish [6]. Present study compares fatty acid profiles of raw, boiled and fried