Development of seafood ready meals enriched with omega-3 fatty acids and seaweed extract

Páll Arnar Hauksson
Kolbrún Sveinsdóttir, Emilía Martinsdóttir

Collaborators:

- University of Iceland
- Matís
- Grímur kokkur
- Marinox
- BioActive Foods

The overall aim of the study was to increase the nutritional value of convenience ready meals with omega-3 oil. The long chain omega-3 polyunsaturated fatty acids in the omega-3 oil are highly susceptible to lipid oxidation and even more so under conditions of high heat. Previous studies have shown that brown seaweed (*Fucus vesiculosus*) extracts were effective antioxidants in food models.

F. vesiculosus extract (5 g per kg fish stew) was added to omega-3 enriched ready-to-eat fish stew (25 g omega-3 oil per kg fish stew) and subjected to mild or extreme heat treatment during processing. Samples were measured before and after oven heating for 12 minutes at 180°C. The fatty acid stability of the enriched fish stew was determined by chemical (peroxide value and TBARS) measurements and sensory evaluation. Samples were measured after 4, 10, 17 and 23 days of storage at 0-4°C.

Results show that the fish stew subjected to severe heat treatment during processing had the highest level of oxidation according to chemical measurements. Samples containing *F. vesiculosus* extract had significantly lower TBARS values after oven heating compared to those without extract. Rancidity was determined to be under sensory threshold for all groups.

The results of this study indicate that *F. vesiculosus* extract is effective in constraining lipid oxidation during high heat treatment of ready meals.