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Antioxidative Effect of Seaweed Extracts in Minced Mackerel- Effect on Lipid and Protein oxidation

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Marine algae, like other photosynthetic plants, are exposed to a combination of light and oxygen that lead to the formation of free radicals and other strong oxidising agents. The absence of oxidative damage to their structural components suggests that they contain protective antioxidative compounds. In our earlier experiments with *in vitro* antioxidative activity of 16 selected species of marine algae from Danish coast, we found that some species may have potential to become an important new source of antioxidants. However, their effectiveness in real food systems needs to be explored. Therefore, a study was undertaken to examine the utilization of seaweed as a source of natural antioxidants for retarding lipid and protein oxidation in minced mackerel. Two species of seaweed, one from red (*Polysiphonia fucooides*) and brown (*Fucus serratus*) algae were selected for the study. Mackerel mince was added 500 mg/kg seaweed extracts, which had been extracted using either water, 50% ethanol or absolute ethanol. A control mince with no added extract and a reference mince with 200 mg/kg of BHT (positive control) were also prepared. Peroxide value (PV), concentrations of volatile oxidation products and tocopherol, as well as sensory analysis were used to assess lipid oxidation. Content of protein carbonyls and loss of tryptophan fluorescence were used to assess protein oxidation. It was found that 50% ethanol extracts from *P. fucooides* was as effective as BHT in preventing oxidation in minced mackerel whereas absolute ethanol extracts showed a pro-oxidative effect. The antioxidant and pro-oxidant nature of these extracts will be discussed in the presentation.