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Abstract

Nordic Seaweed extracts as natural antioxidants in omega-3 PUFA enriched granola bars

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Natural antioxidants derived from marine algae have a high content of bioactive components with potential for improving oxidative stability of lipids in food systems. In this presentation I will discuss results from our ongoing work on the brown algae, *Fucus vesiculosus*. This seaweed contains a wide range of polyphenolic compounds, phlorotannins, with potential antioxidant activity. Thus, *in vitro* antioxidant properties of *F. vesiculosus* extracts have been found to be related to the total phlorotannin content. However, studies on the effectiveness of extracts from *F. vesiculosus* in food systems are sparse. Therefore there is a need for more studies in this area.

A storage experiment was performed in which three extracts from Icelandic *F. vesiculosus* were added to 70% fish oil-in-water emulsions in two different concentrations (1.5 and 2 g/kg). The fish oil emulsions were then incorporated in granola bars (total of 5% fish oil in the bars) to simulate a healthy omega-3 enriched snack. The bars were stored for 10 weeks, where samples were taken and analysed each week. Lipid oxidation during storage was followed by determination of peroxide value, tocopherol content, fatty acid composition and development of secondary oxidation products. Furthermore the incorporation and interaction of the fish oil emulsions in the bars were studied using microscopy.

The preliminary results of this study show that all extracts reduces formation of primary oxidation products compared to the reference sample without extract. Whereas, ethanol and acetone extract was very efficient the water extract was not much different from the reference. The incorporation of fish oil-in-water emulsions into the granola bars was found to be poor when the water extract was added, since very little fish oil was found as droplets in the system. The presentation will discuss these results as well as results from analysis of volatile oxidation products