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*Publication date:*  
2021

*Document Version*  
Publisher's PDF, also known as Version of record

[Link back to DTU Orbit](#)

*Citation (APA):*  
Getachew, A. T., Liu, W., Hermund, D. B., Holdt, S. L., & Jacobsen, C. (2021). *Influence of Nordic F. vesiculosus Extracts on Oxidative and Physical Stability of Fish-Oil-Enriched Mayonnaise*. 62. Abstract from 18th Euro Fed Lipid Congress and Expo.

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## **Influence of Nordic *F. vesiculosus* Extracts on Oxidative and Physical Stability of Fish-Oil-Enriched Mayonnaise**

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Lipid oxidation is a major problem especially in foods containing unsaturated fatty acids causing undesirable off-flavors and reduced shelf life. Therefore, it is necessary to prevent this type of quality deterioration and sustain consumer acceptance by the addition of antioxidants. Synthetic antioxidants have been used in foods and personal care products to slow down or prevent lipid oxidation. However, the ever-growing consumers' interest in natural ingredients and their concern for the safety of synthetic antioxidants has triggered researchers to replace them with natural antioxidants. Natural antioxidants can be extracted from terrestrial and marine environments. *Fucus vesiculosus* is a brown seaweed, which is growing in the waters of the Nordic countries and the Baltic Sea. This seaweed contains several compounds with antioxidant properties such as pigments, tocopherols, phenolic compounds, sulfated polysaccharides, and amino acids. In this study, the lipid-soluble fraction of *F. vesiculosus* (lipids, pigments, and carotenoids) was extracted using supercritical CO<sub>2</sub> and the water-soluble fraction (polyphenols, and sulfated polysaccharide) was extracted using subcritical water. Two types of water-soluble fraction were prepared, one from residue obtained after extraction of lipid-soluble fractions, and the other from whole seaweed powder. The efficacy of the extracts to inhibit lipid oxidation of fish-oil-enriched mayonnaise was studied by adding either the lipid-soluble fraction in the oil phase or water-soluble fractions in the water phase. Moreover, the synergetic effect of oil and water-soluble fractions was studied by adding them in the oil and water phases respectively in the same mayonnaise formulation. The oxidation and physical stability of the mayonnaises was studied during a storage period of 4 weeks by evaluating droplet size, peroxide values, tocopherol content, and volatile oxidation products.