



## Bioactive compounds extracted from seaweed and application in food systems

Hermund, Ditte Baun; Yesiltas, Betül; Honold, Philipp; Jonsdottir, Rosa; Kristinsson, Hordur G.; Nielsen, Kristian Fog; Nielsen, K. F.; Jacobsen, Charlotte

*Publication date:*  
2014

*Document Version*  
Version created as part of publication process; publisher's layout; not normally made publicly available

[Link back to DTU Orbit](#)

*Citation (APA):*  
Hermund, D. B., Yesiltas, B., Honold, P., Jonsdottir, R., Kristinsson, H. G., Nielsen, K. F., Nielsen, K. F., & Jacobsen, C. (2014). *Bioactive compounds extracted from seaweed and application in food systems*. Abstract from 2nd International Conference on Algal Biorefinery, Lyngby, Denmark.

---

### General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

## Bioactive compounds extracted from seaweed and application in food systems

D.B. Larsen<sup>1\*</sup>, B. Yeşiltaş<sup>1</sup>, P. Honold<sup>1</sup>, R. Jónsdóttir<sup>2</sup>, H.G. Kristinsson<sup>3</sup>,  
K.F. Nielsen<sup>4</sup>, C. Jacobsen<sup>1</sup>

<sup>1</sup>Division of Industrial Food Research, Lipids and Oxidation Group, National Food Institute, Technical University of Denmark, Søltofts Plads, Building 221, DK-2800 Kgs, Lyngby, Denmark. E-mail: \*dbala@food.dtu.dk

<sup>2</sup>Marinox ehf., Háeyri 1, IS-550 Sauðárkrúkur, Iceland

<sup>3</sup>Matís, Vínlandsleid 12, IS-113 Reykjavík, Iceland

<sup>4</sup>Department of Systems Biology, Technical University of Denmark, Søltofts Plads, Building 221, DK-2800 Kgs, Lyngby, Denmark

Natural antioxidants derived from marine algae have the potential for improving oxidative stability of lipids in food systems. Brown algae *Fucus vesiculosus* contains a wide range of compounds with potential antioxidant activity, such as pigments, polysaccharides, amino acids and phenolic compounds. *F. vesiculosus* is especially rich in phlorotannins, a major group of polyphenolics. Therefore the *in vitro* antioxidant properties of *F. vesiculosus* extracts have been found to be related to the total phenolic content, but the clarification of how the different phlorotannins contributed to the overall antioxidant activity is lacking. Also, studies on the effectiveness of seaweed extracts in foods are sparse. Therefore more studies in this area are required.

Six different extracts from Icelandic *F. vesiculosus* were studied. The total phenolic content was determined and the *in vitro* antioxidant properties were evaluated. The extracts were also characterized with respect to composition of other bioactive compounds. To evaluate the antioxidant efficacy of the extracts in foods, two storage experiments have been performed. In the first storage experiment two extracts (water and ethyl acetate) were added to 20% fish oil enriched mayonnaise in three different concentrations, 1.0, 1.5 and 2.0 g/kg mayonnaise, respectively. At five time points (day 0, 7, 14, 21, 28) samples were taken and analysed. For the other storage experiment, four extracts were evaluated, an acetone, ethanol and two water extracts; one made of the young part of the seaweed and one of the old part. The extracts were added to 20% fish oil enriched mayonnaise in two different concentrations, 1.5 and 2.0 g/kg mayonnaise, respectively. At seven time points (day 0, 3, 7, 10, 13, 21 and 28) samples were taken and analysed. Lipid oxidation during storage was followed by determination of peroxide value, tocopherol content, fatty acid composition and development of secondary oxidation products. Results from the two storage trials will, along with the characterization of the extracts, be presented.