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Controlling oxidation in skin care products with novel seaweed antioxidants

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Brown algal extracts are potential functional ingredients in cosmetic formulations (e.g. facial creams), due to their content of a wide range of compounds, such as polyphenolics (phlorotannins), polysaccharides and pigments with both antioxidant and anti-aging activity. Moreover, the antioxidant activity of brown algal extract can increase the oxidative stability of facial cream, and thereby protect functional lipids which are prone to oxidation.

Our ongoing work aims to extract highly antioxidative compounds from brown alga, *Fucus vesiculosus* (FV) and *Saccharina latissima* (SL) to explore the application potential for these extracts in facial cream. Water and ethanol extracts were obtained and characterized. The total phenolic content (TPC) and *in vitro* antioxidant properties were determined along with identification of phenolic compounds, pigments and polysaccharides. Furthermore, antioxidant efficacy, physical and oxidative stability were evaluated by storage trials with facial creams containing extracts (two FV-extracts and three SL-extracts).

Results showed that the two algal species had very different antioxidant profiles, e.g. TPC of ethanolic SL-extracts was approximately 150 µg PGE/mL, compared to the 6 times higher TPC in ethanolic FV-extracts. Moreover, the antioxidant properties were highly influenced by extraction media and type of algae. For the *F. vesiculosus* extracts the high TPC was correlated with high radical scavenging capacity. However, no correlation was observed for the SL extracts, for which the highest TPC was correlated with high metal chelating ability. These results show that SL and FV extracts have bioactivity and applicability to facial creams of interest to the cosmetic industry.