

## Interest of algae in cosmetics: Illustration from *Halymenia durvillei* for sensitive and reactive skin

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### Abstract

The skin is colonized by hundreds of diverse bacterial species, which act as a part of the body's first line of defence against the external environment. The diversity of these transient and resident microbes is determined by different characteristics of local surface areas and external factors. Dysbiosis and the decreased microbial biodiversity have been linked with many diseases, including acne and psoriasis. Seite et al. hypothesized that bacteria could affect the pathophysiology of the sensitive skin syndrome. However, the data concerning this relationship are scarce. Moreover, treatment of reactive skin is challenging and generally based on continuous and topical application of anti-sensitive moisturizing tolerance extreme product that improves skin features. On the other side, the application of marine algae in skin treatment is of huge potential due to their properties of anti-acne, antioxidant, anti-aging, and anti-inflammatory, scientists showing that marine algae derived compounds exhibit various beneficial activities on skin health and care. Among them, *Halymenia durvillei* (HD) is a red alga belonging to the Rhodophyceae family, containing phycocolloids, which are the constituent polysaccharides of cell membranes. The current interest in these polysaccharides is due to their known bioactivities, conferred by their anti-allergic, neuroprotective, cytotoxic, anti-nociceptive and immunomodulatory properties, making them promising bioactive products and biomaterials. Based on these data, the first aim of our investigation was to characterize the sensitive skin microbiota and to evaluate the effect of HD extract versus placebo on the bacterial skin microflora after 28 days of treatment by using next-generation sequencing experiments on samples collected from 30 volunteers suffered from reactive and sensitive skin. The second objective was to evaluate the effect of HD extract on neuroinflammation parameters using an ex vivo model. Finally, an in vivo study was performed in a panel of 25 volunteers using clinical and instrumental evaluations.

### Biography

Edith Filaire has worked in major French universities. From 2006 to 2018, she was full Professor and co-director of a Research laboratory at Orleans-Paris Saclay. Her research focuses in cells biology, nutrition and physiology. Currently, she is Scientific Director of the Greentech Group, including 4 companies (Biovitis, Greentech, Greensea and Mapric). In this Group, thema about skin biology, psychophysiology, nutrition-health, and the relationship between microbiota and skin are developed. She is author/coauthor of more than 140 contributions to scientific international journals and 4 chapter books. Recently, she was nominated for the Women in Tech International Award that recognizes people around the world who innovate, inspire and transform the technology sector

### Publications

1. Edith Filaire, Assia Dreux\Zhiga, Carine Boutot, Magalie Cabannes, Edwige Ranouille, Jean Yves Berthon. Characteristics of healthy and Androgenetic Alopecia scalp microbiome: Effect of *Lindera strychnifolia* roots extract as a natural solution for its modulation. 2020. International Journal of Cosmetic Science.
2. Sandie Gervason, Isabelle Metton, Elodie Gemrot, Edwige Ranouille, Gilbert Skorski, Magalie Cabannes, Jean-Yves Berthon and Edith Filaire. *Rhodomyrtus tomentosa* Fruit Extract and Skin Microbiota: A Focus on *C. acnes* Phylotypes in Acne Subjects. 2020. Cosmetics – Open Access Journal.
3. Edith Filaire, Carole Vialleix, Jean-Paul Cadoret, Sophie Guénard, Cedric Muller, Assia Dreux-Zigha and Jean-Yves Berthon. Characterization of Reactive and Sensitive Skin Microbiota: Effect of *Halymenia durvillei* (HD) Extract Treatment. 2019. Cosmetics – Open Access Journal.



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