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# A tale of Brittany seaweeds : regulation of Extracellular Matrix in human dermis fibroblasts by poly and oligosaccharidic fractions from seaweeds *Ulva sp.* and *Solieria chordalis* (C.Agardh) J.Agardh and potential cosmetic applications

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## Résumé

Seaweeds are rich in bioactive molecules (proteins, polysaccharides, lipids) that offer potential applications in blue biotechnologies.

Among these areas of application, natural cosmetics is booming. To pursue innovation, the discovery of new bioactives is essential. Previous works have highlighted the bioactive potential of macroalgae for cosmetic applications (Bedoux G., 2014 ; Lopez-Hortas L., 2021)

Brittany has a significant diversity of seaweed, particularly proliferative species such as the green algae *Ulva sp.* and the red algae *Solieria chordalis* (C.Agardh) J. Agardh, which are currently undervalued. These two seaweeds produce sulfated polysaccharides, ulvan and iota-carrageenan, respectively, which may have bioactive properties. However their high molecular weight can limit the bioavailability and application potential. Depolymerization allows to reduce their size (and to obtain oligosaccharides) while preserving or even improving their biological activities.

Fibroblasts represent the main cell population of the human dermis and are responsible for ExtraCellular Matrix (ECM) homeostasis. They produce the components of this matrix (glycosaminoglycans, collagens, metalloproteinase) which are essential for cutaneous integrity. This cell population is therefore a target for evaluating the effects of biomolecules for dermocosmetic applications. In our research, we investigated the potential biological activity of *Ulva sp.* and *S.chordalis* fractions on extracellular matrix of human skin fibroblasts, considering both anabolic and catabolic pathways using a proteomic and transcriptomic analyses on type 1 and 3 collagen, type 1 metalloproteinases (MMP-1), Glycosaminoglycans, markers of ECM.

This presentation emphasizes and compare the potential use of crude and depolymerized ulvans and *S.chordalis* iota-carrageenan for dermo-cosmetic applications in skin anti-aging strategies.

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