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# DIVERSITY OF EXOPOLYSACCHARIDES FROM MARINE BACTERIA AND THEIR GELLING PROPERTIES

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## Résumé

Marine bacteria are an important renewable source of bioactive exopolysaccharides (EPS). Their unique chemical structure can make them an attractive and innovative alternative source of cosmetic products and glycosaminoglycan-like drugs for biomedical applications (1). Their biological activities depend on structural properties such as their anionic nature and their molecular weight.

In BlueRemediomics project, we explore the diversity of anionic EPS derived from marine bacteria and their functional and biological activities, in particular to develop macro and microgels. Unique polysaccharides with novel chemical structures were isolated and characterized. Their biosynthesis was investigated through genomic studies and production in fermenters.

Focusing on their gelling properties, macro and microgels were obtained by ionic cross-linking in the presence of divalent cations through extrusion and emulsification (microfluidics) methods, respectively, and tested for the encapsulation of various compounds such as lactic bacteria or pharmaceuticals. LABs and their metabolites such as bacteriocins are useful for the biopreservation of food to inhibit the growth of pathogens. Encapsulation of drugs or LABs or their antimicrobial peptides inside matrices may improve their stability and viability in hostile environment while ensuring controlled release of bioactive compounds.

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(1) Delbarre-Ladrat C., Sinquin C., Lebellenger L., Zykwinska A., Collic-Jouault S. *Exopolysaccharides produced by marine bacteria and their applications as glycosaminoglycan-like molecules*. Front Chem. 2: 85, 2014, doi: 10.3389/fchem.2014.00085.

**Mots-Clés:** Polysaccharide, marine bacteria, microgel, encapsulation

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