INVESTIGATING THE STRUCTURAL AND FUNCTIONAL PROPERTIES OF CAPSULAR POLYSACCHARIDE FROM *PSYCHROBACTER SP.* TAE2020

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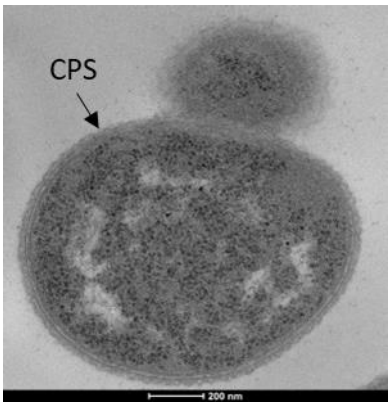
The extracellular polysaccharides produced by extremophilic bacteria stand out for their structural complexity, often characterized by the presence of rare sugars [1]. *Psychrobacter* sp. TAE2020 is a vesiculating γ-proteobacterium isolated from an Antarctic coastal seawater sample [2].



TEM images of thin sections of *Psychrobacter sp.* TAE 2020.

This marine bacterium can produce and secrete molecules endowed with surfactant and emulsifying properties. We recently isolated and purified the anti-adhesive and emulsifying polysaccharide-protein complex, CATASAN. The complex can reduce biofilm formation and the detachment of biofilm of the nosocomial bacterium *Staphylococcus epidermidis* [3]. Here we reported the purification and the characterization of the polysaccharide portion of CATASAN produced from *Psychrobacter* sp. TAE2020. The polysaccharide was found to be associated with cells as a capsule (CPS). The purified polymer was analysed using chemical analyses, and NMR spectroscopy technique and consists of a tetrasaccharide repeating unit containing all aminosugars. Anti-biofilm assay and confocal laser scanning microscopy suggested that CPS reduces *S. epidermidis* biofilm formation without affecting cell viability and leads to a more unstructured and heterogeneous biofilm. Finally, the adhesion of CPS on liposomes has been evaluated.

References:

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