

ANNUAL INDUSTRIAL BIOTECHNOLOGY AND BIOPROCESSING CONGRESS

September 17-18, 2018 | San Diego, USA

E-BDSOM-Exopolysaccharide from *Bacillus altitudinis*, a Deep southern ocean microbe

Urmi Halder and Rajib Bandopadhyay
The University of Burdwan, India

Exopolysaccharide from *Bacillus altitudinis*, a Deep Southern Ocean Microbe (E-BDSOM): Microbial EPSs has unique properties, & can be isolated from the bacteria of various ecological niches including marine environment. We have been working on the production & characterization of low molecular weight EPS from *Bacillus altitudinis* SORB11 isolated from the harsh environment of 3.8 km deep the Southern Ocean, which showed maximum similarity on the basis of 16S rDNA and complete genome analysis with *B. altitudinis* 41KF2bT, previously reported from 41km above of stratosphere. An important EPS-producing gene region (epsCD) is located in its genome of *B. altitudinis*. Maximally 11.5 g/L production was obtained & about 70% sugar component of EPS was detected by phenol-H₂SO₄ estimation. This EPS is porous in nature which is revealed by SEM. The biopolymer existed as flexible chains as well as disordered random inter/intra molecules in water apparently different from the rod-like chains, observed by AFM. XRD was showed the crystalline nature of the EPS. MW was 1.24×10³Da determined by GPC. GC-MS showed the presence of mannose & glucose as monomers. Structural characteristics were elucidated by performing FTIR, 1H, 13C including 2D-NMR to detect the presence of the furanoid ring of the sugar units, glycosidic linkage along with the non-carbohydrate parts. Thermostability was also detected & only 45% of the total mass was degraded while the temperature increased up to 600°C. The viscosity of the EPS was increased by the temperature. The EPS has a good antimicrobial, DPPH & ABTS mediated free radical scavenging activity. Green synthesis of EPS-AgNO₃ np-conjugate was prepared and characterized by SEM-EDX, AFM, TEM, FT-IR, UV-Vis spectrum, zeta potential & particle size analyzer. Prepared np-conjugate was round shaped & 10-30µm sized. Antimicrobial activity of the np-conjugate was also preferable.

urmi.microbio@gmail.com