

POLYSACCHARIDE: PRODUCTION, IDENTIFICATION AND STRUCTURE FROM *BACILLUS SP.* USING INDUSTRIAL WASTES AS CARBON SOURCE

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An exopolysaccharide have been obtained from *Bacillus sp.* The highest exopolysaccharide yield when it had been grown on sucrose 10%+ mannitol 10%+ whey 80% under shaking culture conditions. The exopolysaccharide was hydrolyzed and the resultant sugars were identified. Glucose, mannose, galactose and glucuronic acid with molar ratios (4.2: 0.5: 0.8: 1.0) were the content. The precipitate polysaccharide with absolute alcohol was poured on Sephadex (G₂₀₀). Three fractions were obtained and each one was hydrolyzed. Glucose, mannose, galactose and glucuronic acid at molar ratios of (3.2: 1.2: 0.5: 1.0); (2.9: 1.0: 0.8: 1.0) and (2.6: 1.0: 0.8: 1.0) for fractions A, B and C, respectively. Molecular weights were (2.2 x10⁵, 2.0x10⁵ and 1.8 x10⁵). Partial acid hydrolysis was carried with 0.2 N oxalic acid. The hydrolysate was free form any sugar. Another partial acid hydrolysis by 2.0 N trifluoro acetic acid gave four oligosaccharides in addition to free galactose. Complete acid hydrolysis for the oligosaccharides of the three fractions A, B and C gave glucose, mannose and glucuronic acid in molar ratios (1.8: 1.0: 0.9); (2.0: 1.0: 1.1) and (2.0: 0.8: 1.4), respectively. Periodate oxidation of the three fractions A, B and C was done. Formic acid was determined. Smith's degradation of the sugar alcohols gave three sugar derivatives (glycerol, erythritol and erythric acid) which separated and determined by HPLC. Infra red (I.R) for all the fractions A, B and C was done. From all the above results, it could be partially proposed the structure of the polysaccharide.