

Improved physic-chemical properties of BC produced using SSGO as an additive in chemically defined medium

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Bacterial cellulose (BC), distinct from those of plant celluloses, have contributed to the development of new materials like high performance speaker diaphragms, tourniquets, diet foods, artificial skin, medical pads, make-up pads, and paint thickeners. Given all these applications, BC has a high potential for commercialization. The low productivity and high production costs of BC are the main obstacles in its commercial utilization. In this study, the role of single sugar α -linked glucuronic acid-based oligosaccharides (SSGO), produced as byproduct during BC synthesis, was evaluated in BC production. SSGO was added to the chemically defined medium as secondary nutrient. Experiments were performed by adding various concentrations (5g~40g/L) of SSGO to the chemically defined medium. FT-IR, XRD, tensile strength and water release rate were also investigated. BC productivity increased more than 2 times in shaking culture when 10g/L of SSGO was added and 4 times in static culture when 20g/L of SSGO was added. Tensile strength increased more than 5 times in static culture when 10g/L of SSGO was added.