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Production of Bacterial Cellulose by *Acetobacter* sp. A9 in Shaking Cultures

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Bacterial cellulose (BC) is essentially a high-value speciality chemical with specific applications and usage. Because of its high tensile strength and water holding capacity, BC has been used as a raw material for producing high fidelity acoustic speaker, high quality paper and diet and dessert foods. In this study, the optimum fermentation condition for the production of cellulose by a newly isolated *Acetobacter* sp. A9 was determined by shaken cultures. The strain was able to produce cellulose at 25-30℃ with a maximum at 30℃. Cellulose production occurred at pH 4.5-7.5 with a maximum at pH 6.5. The improved medium composition was 4%(w/v) glucose, 0.1%(w/v) yeast extract, 0.7%(w/v) polypeptone and 0.8%(w/v) $Na_2HPO_4 \cdot 12H_2O$. Under this culture condition, cellulose of 3.8 g/l was produced after 7 d of cultivation, although this strain produced only 2.2 g/l in the standard medium. The addition of ethanol to the improved medium was enhanced cellulose production. In an improved medium containing 1.4% (v/v) ethanol, cellulose production was 15.2 g/l, which was about 4 times higher than that without ethanol. Addition of ethanol was found to eliminate the spontaneous mutation of *Acetobacter* sp. A9.