Início Autores Eixos Temáticos Trabalhos

PRODUCTION OF BACTERIAL CELLULOSE USING DIFFERENT STRAINS OF ACETIC ACID BACTERIA

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Eixo Temático

INOVAÇÃO E BIOTECNOLOGIA

Palavras chave

Acetic Acid Bacteria, fermentation, yield, biopolymer Several microorganisms have been identified as potential for obtaining bacterial cellulose (BC), among them the species of the genus Komagataeibacter have shown better yields in relation to the others. This production path guarantees the supply of a highly pure cellulose source, a feature required by many of the applications for which it is intended. As a result of its properties, BC can be used in several areas such as, for example, in the food industry, being able to act in the formation of the gel, as thickening agent and stabilizer, packaging component. In addition, its biocompatibility, biodegradability and high purity favor its destiny in applications in the cosmetics and biomedical productions sector. In order to increase in the production of this biopolymer, it is necessary to adapt the cultivation conditions, as well as the use of strains with high production capacity. The objective of this work is to compare the maximum yield (g/L) of BC between the strain Komagataeibacter sp. V-05, isolated from a vinegar producing industry and two reference strains (Komagataeibacter xylinus ATCC 700178 and Komagataeibacter hansenii ATCC 23769). The strains were obtained from the bacterial collection of the Laboratory of Food Analysis of the State University of Londrina (UEL). For the production of BC 10% inoculum were transferred to Erlenmeyer flasks containing Hestrin-Schramm (HS) reference medium and cultured at 30 °C/10 days in static conditions. The films obtained were immersed in 1 M NaOH solution and heated at 80 °C for 1 hour, washed with distilled water several times until neutrality, then oven dried at 60 ° C until constant weight to obtain the maximum yield (g/L) of each strain. The production of bacterial cellulose in reference medium differed significantly (p<0.05) among the strains and the maximum yield from Komagataeibacter sp. V-05 (3.40 ± 0.04) exceeded the reference strains K. xylinus ATCC 700178 (1.05 ± 0.01) and K.hansenii ATCC 23769 (0.86 ± 0.00). The use of this acetic acid bacteria promoted an increase of about 3 to 4 fold in production as compared to the strains K. xylinus ATCC 700178 and K. hansenii ATCC 23769, respectively. The results confirm the potentiality of the isolated strain to produce the biopolymer in question. Further studies are needed to assess the capacity of this bacterium in other sources of carbon and nitrogen, such as agroindustrial wastes, in order to minimize the production costs involved.