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Bacterial cellulose production by *Komagataeibacter* xylinus using a culture medium based on mango waste supplemented with different nitrogen sources

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Bacterial cellulose (BC) is a high value- added biopolymer with several uses in biomedical and pharmaceutical industries. In comparison to plant cellulose, BC presents higher purity and mechanical strength. Nevertheless its production costs are high. The use of agro-waste to formulate culture media could make the BC production process economically feasible. Mango waste (*Mangifera indica*) contains significant amounts of sugars and could be used as fermentation feedstock. It has been reported that the nitrogen source used for the culture media formulation has an important impact in the BC synthesis. The purpose of this study focuses on using mango pulp waste - supplemented or not with different nitrogen sources - as culture medium for BC production. Crystallinity and thermal stability of the biopolymer synthesized were also studied. Methodology: Mango pulp was analyzed for total sugars content, and was then adjusted to an initial concentration of 50 g/L. Nitrogen sources were added to formulate the different media: peptone, yeast extract, urea or ammonium sulphate. *Komagataeibacter xylinus* was acquired from DSMZ, and was inoculated in 20 mL of each culture media (8 cm- diameter glass flasks), which were incubated for 12 days under static conditions at 30°C. XDR and TG analysis were performed on the BC membranes produced. Findings: *K. xylinus* was able to produce BC in all media tested; nevertheless higher BC production was reached when adding peptone. BC produced from mango- based media presented physical and morphological characteristics similar to those obtained in traditional HS medium. Conclusion & Significance: Mango waste pulp is a feasible carbon source for BC production, and its use for media formulation could have an important impact in the biopolymer production cost.

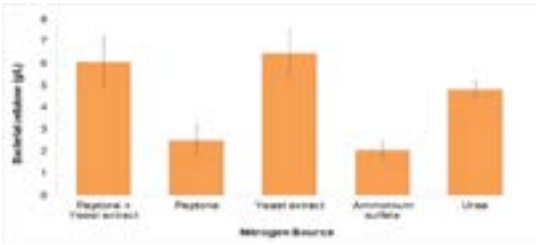

Figure 1: BC production (static culture, 12 days) in mango-based culture media formulated with different nitrogen sources.

Biography

Yolanda González-García holds a PhD degree in Biotechnological processes and has her expertise in Industrial microbiology with special focus in bacterial biopolymers such as polyhydroxyalkanoates, exopolymeric substances, and bacterial cellulose. In 2007 she received the Ernst Mach grant from the Austrian Agency for International Mobility and Cooperation in Education and Research, for research exchange at the Graz University of Technology. She is titular researcher at the University of Guadalajara (Mexico) specifically at the Department of Wood, Cellulose and Paper, where studies the feasibility of using industrial wastes and by-product streams for the biotechnological production of value added-products.

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