

Título: PROSPECTING PRODUCING BACTERIA FOR POLY-(3HYDROXYBUTYRIC ACID) FROM AGRO-INDUSTRIAL WASTE

Autores: Moraes, L.B.¹; Souza, D. 1; Rieger, A. ¹; Muller, M. V. G.¹

Instituição: ¹Universidade de Santa Cruz do Sul-UNISC (Av. Independência, 2293, Santa Cruz do Sul, RS)

Abstract: The increasing consumption of plastic products, petroleum derivatives, and improper disposal cause serious environmental and economic impacts. As a result, the global industry undertakes to explore the production of biodegradable polymers. An alternative that has been highlighted is the production of polymers of biological origin, including polyhydroxyalkanoates, especially polyhydroxybutyrate (PHB), a polymer found as storage material in bacteria. Despite the PHB already be produced on an industrial level, the production cost still very high when compared to petrochemical plastics. There is the possibility of production of polymer using organic residues, seeing Brazil is one of the largest crop-based economies in the world. Within this context, this work aimed prospecting producing bacteria PHB using organic residues as a carbon source to reduce costs and thus increase the productivity of the biopolymer. We selected 30 bacterial isolates obtained from microbiological collection of the University of Santa Cruz do Sul. As carbon source, was used tobacco seeds pie, treated by hydrolysis with sulfuric acid 4% in autoclave (121°C, 15 minutes and 1 atm). The bacteria was inoculated into broth and agar, with the same composition, in triplicate and incubated at 25 ° C for 48 hours. The plates with bacterial growth, was covered with Sudan Black (ethanolic solution of 5%) and left in dark room for 30 minutes, posteriorly visualized with UV light chamber. The broth with bacterial growth was prepared on slides and stained with Sudan Black (ethanolic solution of 5%), using safranine 0.5% as contrast dye. Of the 30 isolates, 33.3% (10) showed development of PHB granules, viewed in microscopy. Isolated E10, CN1 and SN1 stood out with higher formed granules. The results indicate that the chosen substrate has great potential for use to obtain polymers for the plastics industry, replacing the commonly used sucrose, cheapening the process costs. Even, the prospection for new isolates open more alternatives for the already now producer organisms, looking for local development.

Palavras-chave: Poly-(3hydroxybutyric acid), bioprospecting, agro-industrial waste, PHB