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Modification of molecular and optical properties of cellulose triacetate by alpha particles irradiation

MAbutalib
KingAbdulazizUniversity, Saudi Arabia

Samples from sheets of the polymeric material cellulose triacetate have been exposed to alpha particles in the dose range 20-100 Gy. The modifications induced in the molecular and optical properties of cellulose triacetate samples due to alpha particles irradiation have been studied through different characterization techniques such as intrinsic viscosity, refractive index and color difference studies. The results indicated that the crosslinking is achieved at the dose range 60-100 Gy. This crosslinking led to an increase in the value of intrinsic viscosity, indicating an increase in the average molecular mass. This was associated with an increase in the refractive index. Additionally, the non irradiated cellulose triacetate samples showed significant color sensitivity towards Alpha particles irradiation. This sensitivity appeared in the change in the blue color component of the non irradiated cellulose triacetate film to yellow after exposure to alpha particles up to 100 Gy. This is accompanied by a net increase in the darkness of the samples.

mabutalib@kau.edu.sa

Cultivation of *Spirulina* sp., LEB 18 in polyhydroxybutyrate (PHB) waste extraction

Michele Grequede Morais, Jorge Alberto Vieira Costa and **Cleber Klasener da Silva**
Federal University of Rio Grande, Brazil

The capacity of development, utilization and waste treatment by microalgae has stimulated the interest of researchers a few years. *Spirulina(Arthrospira)* is a photosynthetic cyanobacterium that has high protein content is a source of vitamins and minerals. The waste extract of polyhydroxybuturate (PHB) is not indicated to discard in environment because a diversity of compounds for example chlorine and organic material. But these compounds are a good reserve of nutrients for cultivation of microorganisms. The objective of this study was the utilization of the waste of poly-hydroxybutyrate extraction (PHB) in the cultivation of *Spirulina* sp. LEB18. Cultivations were carried out in duplicate and 0, 2, 4, 6, 8, 10% (w/w) of residue was used. The residue was used above three conditions: Heating at 121°C for 15 min and 0.111 MPa, chemical neutralization with sodium thiosulfate ($Na_2S_2O_3$) and without prior treatment. The cultures exhibit maximum cell concentrations untreated, heat treated and neutralized waste 0.96 (8% residue) 1.2 (6% residue) and 1.3 (2% residue) g L-1 respectively. The productivity values obtained for untreated, heat treatment and chemical neutralization were 0.04, 0.08 and 0.09 g L-1 d-1. These results demonstrate the potential to use this residue to cultivation of *Spirulina* sp. LEB 18 can reduce the cost of cultivation and minimize waste disposal into the environment.

migreque@yahoo.com.br