Poster

Cellulose from Posidonia oceanica using clean technologies

Pipió Ternero, A1., Moral Rama, A1., Ballesteros Martin, M.M1.

ECOWAL group, Molecular Biology and Biochemical, Engineering, Dpt Faculty Pablo Olavide University. Ctra Utrera Km 1, 41013 Sevilla. Spain.

Tutor académico: Moral Rama, Ana

Keywords: Posidonia oceanica; cellulose; chemical characterization; clean technologies.

ABSTRACT

Due to climate change, environmental conscience is becoming increasingly important today. Deforestation contributes 15-20% to greenhouse emissions, therefore, with the aim of minimizing the felling of trees, there are many investigations that focus on the search for alternatives to the use of wood such as the use of agricultural waste or alternative raw materials to conventional. Among the alternative raw materials to conventional ones to get cellulose, one of the most industrially produced polymers with 1.5 × 10 ^ 12 tons per year, there are tidal residues, composed of algae and marine plants of which there are few studies.[1] After all, cellulose extraction has been considered, since ancient times, terrestrial raw materials as the main route. After storms with large waves this biomass causes large accumulations that form uplands in the coasts with depositions of about 125 Kg of dry matter per kilometer of grassland [2] on the coasts in the form of sidewalks or uprights that provide organic matter and food support for many species of insects, birds, etc. However, its decomposition and rot can affect the adequacy of the beaches and pose problems for tourism due to its visual impact, bad smells, etc. that force the local administration to withdraw to landfills in the summer months. In the present study a chemical characterization of Posidonia oceanica waste collected on the beach of Almerimar (Almería) by the ECOWAL group is carried out. A standard protocol is followed that analyzes moisture content (TAPPI T 257 Standard), ash (TAPPI T 211 Standard), hot water solubility (TAPPI T 257 Standard [2]), soda solubility (TAPPI T 212 Standard [2]), extractable with ethanol-benzene (TAPPI Standard T 204 [2]), lignin (TAPPI Standard T 222 [2]), holocellulose (Method of Wise et al. [3]) and α-cellulose (TAPPI Standard T203 0S- 61 [2]) .

The results obtained from the chemical characterization confirm that Posidonia oceanicais a very good alternative to other conventional raw materials, due to its high content in cellulose and its low-level of ligninalo which makes cellulose extraction relatively simple, economical and with much conditions less energetic so that in future research the study of cellulose extraction from P. oceanica will be expanded, seeking to maximize energy efficiency and the reduction of chemical reagents

REFERENCES

[1] Abdul Khalil, H., Bhat, A., & Ireana Yusra, A. (2012). Green composites from sustainable cellulose nanofibrils: A review. Carbohydrate Polymers, 87(2), 963-979. doi: 10.1016/j.carbpol.2011.08.078.

[2]Borum, J., Duarte, C. M., Krause-Jansen, D. and Greeve T. M.,(2004) (eds), European seagrasses: an introduction to monitoring and management. The M&MS project publisher, ISBN 87- 89143-21-3, pp. 83-84.