Poster

REVALUATION OF TIDAL WASTE IN THE SYNTHESIS OF CATIONIC FLOCULANTS

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ABSTRACT

From samples of tidal waste, collected on the coast of Huelva (Matalascañas) of the Posidonia oceanica species, it is decided which part of this aquatic plant is the most suitable for carrying out a cellulose extraction process, through the characterization of all its visible parts in coastal debris. After this, soda treatment is used, where most of the lignin present in the sample is eliminated, to subsequently carry out a bleaching treatment of the fiber using hydrogen peroxide. Two final samples with a reflectance index of 67.9 and 71.3 are chosen, to which a mercerization and cationization process will be carried out to be able to synthesize cationic flocculants, as well as revalue these coastal residues. In addition, different alternatives to the original process for obtaining flocculants will be tested, with which the protocol for both cellulose extraction and flocculant synthesis are optimized.

Motivation: After the increase in ocean temperatures due to climate change, certain species of aquatic plants are seeing an increase in their reproductive rates, giving rise to overpopulations (Bettaieb et al., 2015), this is interpreted as an increase in reusable coastal waste (Ahmed et al., 2019).

Methods: Preparation of the raw material by means of a separation and fractionation, later a hydrothermal treatment and conditioning will be carried out (Moral et al., 2015). After this, a chemical characterization of the raw material will be carried out to choose which part of the aquatic plant will be used. Finally, an extraction of cellulose and subsequent synthesis of cationic flocculants will be carried out (Moral et al., 2019).

Results: After the chemical characterization, the leaves of Posidonia oceanica will be used as starting raw material, for the extraction of cellulose, the soda treatment will be used and later a treatment with hydrogen peroxide, finally for the synthesis of flocculants it will be used marcerization and cationization.

Conclusions: Posidonia oceanica leaves are the ones with the highest cellulose content. The initial process can be optimized saving time, chemical products used and energy. Hydrogen peroxide treatment removes most of the lignin from the fiber. Aquatic plants are easier to extract cellulose than terrestrial plants. From the starting raw material a stable and effective cationic flocculant is obtained.

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