Identificació del projecte

Nom del projecte

Circular economy and carbon footprint reduction through biorefinery: converting lignocellulosic biomass into bioplastics, microbial proteins and lignin-based nanofibers

Expedient numero

2023 CLIMA 00076

Descripció del projecte

Fossil fuel sources cause climate change and have limited availability. To combat this issue, we propose an integrated biorefinery concept to transform corn and sunflower stalks into bioplastics, microbial proteins, and lignin-based nanofibers. Biodegradable polyhydroxyalkanoates will be produced as bioplastics from cellulose and/or hemicellulose by bacteria, reducing the environmental impact. Simultaneously, while extracting the polymer produced by bacteria, microbial proteins will be isolated for animal feed applications, decreasing the overall cost of biopolymer production. In addition, nanofibers will be produced from lignin fraction of biomass. Therefore, we will give value to residues in terms of the circular economy concept. A life cycle analysis and environmental impact assessment will be conducted to understand, quantify and enhance sustainability and profitability while analyzing the decrease in carbon footprint compared to petrochemical synthesis.

Financiació

Entidat finançadora

Amb el suport del Departament de Recerca i Universitats, del Departament d'Acció Climàtica, Alimentació i Agenda Rural i del Fons Climàtic de la Generalitat de Catalunya

Import

314.010,00 €