

Deep Eutectic Solvents for Biomass Fractionation (Eucalyptus) using Microwave and Oil Bath: A Comparative Methodology Study

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Deep Eutectic Solvents (DES) have gained prominence as green solvents for various chemical processes (Lynam, Kumar and Wong, 2017). This study investigates their application in the biomass fractionation of eucalyptus, employing both microwave and conventional heating techniques. The aim is to compare the efficiency and sustainability of these methods, shedding light on their respective advantages and drawbacks.

The experiment involves the dissolution of eucalyptus biomass in DES under microwave irradiation and traditional oil bath heating. Our results show significant differences in the extraction yields and product distribution between the two methodologies. We analyzed the impact of DES composition and heating methods on the efficiency of biomass fractionation, providing insights into the optimized conditions for maximal product yield.

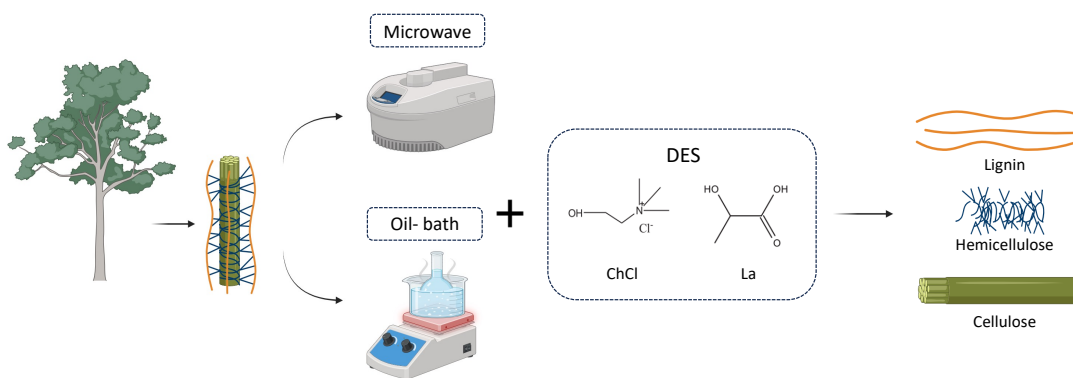


Figure 1. Schematic representation of eucalyptus biomass fractionation

Incorporating microwave technology in DES-based biomass fractionation demonstrates enhanced reaction rates and selectivity, emphasizing its potential as a sustainable and efficient alternative to traditional oil bath methods. Furthermore, the study investigates the environmental impact, energy consumption, and scalability of both approaches, contributing to the broader understanding of their practical applicability.

This research provides significant contributions to the application of deep eutectic solvents (DES) in the fractionation of biomass. The findings underscore the importance of selecting appropriate methodologies for sustainable and efficient biomass processing. The presented results aim to stimulate discussions and further research in the realm of green chemistry and renewable resource utilization.