

Exploring Membrane Technology: A Promising Sustainable Strategy for Purifying Plant-based Starch Hydrolysate Products

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Membrane technology has emerged as a versatile tool in plant-based processing, offering innovative solutions to enhance efficiency, product quality, and sustainability. This abstract highlights the application of membrane technology in treating starch hydrolysates, a crucial aspect of natural and sustainable modern food production.

Starch hydrolysates, derived from enzymatic or acid hydrolysis of starch into syrup form, present a versatile application with defined carbohydrate compositions and concentrations. Influenced by harvest conditions and raw material availability, these hydrolysates are primarily sourced from crops like corn, wheat, rice, potatoes, and plant roots, finding extensive use across various industries, from food production to textiles, paper, cosmetics, and pharmaceuticals. However, they also pose unique challenges and opportunities in downstream processing.

Commercially available membrane filtration processes offer versatile methods for recovering, concentrating, purifying, and fractionating starch hydrolysates. These processes enable the removal of impurities such as colour molecules, proteins, characteristic flavours, salts and acids, as well as the isolation and concentration of individual sugar, thereby enhancing the overall quality and functionality of the hydrolysate.

Furthermore, membrane technology contributes to waste minimization and reduces energy consumption compared to conventional methods by also facilitating the recovery of valuable components from process streams, thereby enhancing process efficiency and sustainability. Through case studies and experimental data, this poster showcases the practical applications and benefits of membrane technology in agro-food processing, with a specific focus on starch hydrolysates.

Overall, the integration of membrane technology into starch hydrolysate processing holds great promise for optimizing processes, improving quality, and advancing sustainability goals. This poster serves as a primer for further exploration and discussions on the potential of membrane technology in the plant-based industry.