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Analysis of the desalination process for the biological production of erythritol

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ABSTRACT

The interest and consumption of healthy sugar substitutes is increasing. Among these compounds is erythritol, which is obtained in a biotechnological process. An important step in the biotechnological process is product separation and purification. By fermentation, the conversion of renewable raw materials into erythritol is carried out and a fermentation broth is obtained, which is a solution that requires desalination and purification. The main challenge during the downstream stage is the separation of inorganic salts, mainly sodium chloride, which increases the fermentation yield but becomes a contaminant after the upstream stage. This paper presents ion exclusion as a method of desalting an erythritol solution using ion exchange resin in sodium form. The presented experimental studies and the mathematical model indicate the possibility of increasing efficiency of the process in a multistage system and the possibility of selecting parameters based on process simulations. As a result, it is possible to reduce losses and increase the purity of the product.

Keywords: Erythritol; Bioconversion; Desalination; Preparative liquid chromatography

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