

INFLUENCE OF IONIC STRENGTH ON ELECTROFILTRATION BY USING XANTHAN AS A MODEL PRODUCT

— research paper —

MANUELA CARMEN SAFTESCU^{1*}, GÖZDE GÖZKE**, CLEMENS
POSTEN**

** Department of Food Biotechnology, Faculty of Agricultural Sciences, Food
Industry and Environmental Protection, “Lucian Blaga” University of Sibiu,
Romania*

*** Department of Bioprocess Engineering, Institute of Engineering in Life Sciences,
University of Karlsruhe (TH), Germany*

Abstract: This paper presents the results obtained at the use of electrofiltration (EF) for the bioseparation of xanthan, a negatively charged biopolymer. Different values of conductivity (σ) for the filtration solution and flushing solution were tested, in order to improve EF (increasing of the filtrate mass and decreasing of amperage). The conductivity of the filtration solution was obtained by using different ions (magnesium sulphate and sodium sulphate) with different concentrations and varied between 40 and 3000 $\mu\text{S}/\text{cm}$. Three sets of experiments were realised: normal filtration (without EF), EF with variation of σ_{xanthan} at the maintaining of constant $\sigma_{\text{flushing_solution}}$ and EF with variation of σ for both xanthan and flushing solution. The results show that, compared with the normal filtration, EF determines the increase of the filtrate mass. At EF, different curves are obtained, depending on the correlation between the conductivity of xanthan and in the flushing solution. For an optimal filtration, it is important that σ_{xanthan} and $\sigma_{\text{flushing_solution}}$ to have similar values. The filtration speed increases with the increase of conductivity. The increase of $\sigma_{\text{flushing_solution}}$ determines the increase of the amperage (current intensity). In the range tested in this work, the best filtration is obtained at $\sigma=200 \mu\text{S}/\text{cm}$.

Keywords: electrofiltration, xanthan, conductivity

¹ Corresponding author. Mailing address: University “Lucian Blaga” of Sibiu, Faculty of Agricultural Sciences, Food Industry and Environmental Protection, Str. I. Rațiu 7-9, 550012 Sibiu, Romania. Phone: 0040/269/211338. Fax: 0040269212558. E-mail address: manuelacarmen77@yahoo.com