

Effect of Different Salts on *Pseudomonas taetrolens*' Ability to Lactobionic Acid Production

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Abstract : Lactobionic acid is a disaccharide formed from gluconic acid and galactose, and produced by oxidation of lactose. Productivity of lactobionic acid by microbial synthesis can be affected by various factors, and one of them is a presence of potassium, magnesium and manganese ions. In order to extend lactobionic acid production efficiency, it is necessary to increase the yield of lactobionic acid by optimising the fermentation conditions and available substrates for *Pseudomonas taetrolens* growth. The object of the research was to determinate the application of K_2HPO_4 , $MnSO_4$, $MgSO_4 \cdot 7H_2O$ salts in different concentration for effective lactose oxidation to lactobionic acid by *Pseudomonas taetrolens*. *Pseudomonas taetrolens* NCIB 9396 (NCTC, England) and *Pseudomonas taetrolens* DSM 21104 (DSMZ, Germany) were used for the study. The acid whey was used as the study object. The content of lactose in whey samples was determined using MilcoScanTM Mars (Foss, Denmark) and high performance liquid chromatography (Shimadzu LC 20 Prominence, Japan). The content of lactobionic acid in whey samples was determined using the high performance liquid chromatography. The impact of studied salts differs, Mn^{2+} and Mg^{2+} ions enhanced fermentation instead of K^+ ions. Results approved that Mn^{2+} and Mg^{2+} ions are necessary for *Pseudomonas taetrolens* growth. The study results will help to improve the effectiveness of lactobionic acid production with *Pseudomonas taetrolens* NCIB 9396 and DSM 21104.

Keywords : lactobionic acid, lactose oxidation, *Pseudomonas taetrolens*, whey

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