

EFFECT OF PHYSICAL PARAMETERS ON D-XYLONIC ACID PRODUCTION USING RECOMBINANT *E. COLI* BL21 (DE3)

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Abstract

D-xyloonic acid is a five-carbon organic acid that has gain increasing interest due to its broadly flexible application in fields such as foods, pharmaceutical and agriculture. Microbial production of D-xyloonic acid can be done by using many species of *Pseudomonas*, *Acetobacter*, *Gluconobacter* and the latest finding was by engineered microorganism. In this study, recombinant *E. coli* BL21 (DE3) is used to produce D-xyloonic acid from D-xylose and the effect of temperature, initial pH of medium and agitation rate on D-xyloonic acid production is determined. Fermentation was carried out using super optimal broth medium in shake flasks for 24 hours. Results indicate that D-xyloonic acid concentration was as high as 9.95 g L⁻¹ with yield of 0.91 g/g D-xylose from 10 g/L when governed under temperature of 37°C, initial pH of medium pH 7 and agitation rate 200 rpm.

Keywords: D-xyloonic acid, recombinant *E. coli* BL21 (DE3), D-xylose, temperature

Area of research: Biochemistry, Organic acid, Fermentation