

PENGARUH GLUKOSA DAN FRUKTOSA TERHADAP PRODUKSI POLIHIDROKSIALKANOAT OLEH *Ralstonia eutropha* JMP 134 SECARA FERMENTASI *BATCH*

EFFECT OF GLUCOSE AND FRUCTOSE ON PRODUCTION POLYHYDROXYALKANOATES BY *Ralstonia eutropha* JMP 134 AS BATCH FERMENTATION

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ABSTRACT

Polyhydroxyalkanoate (PHA) is a bioplastic from the group of polyester with physicochemical properties similar to polypropylene plastic from petroleum. This research aims to study the effect of glucose and fructose on PHA fermentation process performed by using *Ralstonia eutropha* JMP 134 in a batch bioreactor. Dynamics of PHA production from carbon sources glucose or fructose, as well as the influence of volatile fatty acids as a precursor were studied in this research. Fermentation operating condition using bioreactor 10 L maintained at a temperature of 30°C and pH of 7. The concentration of carbon source used was 40 g/L, and after 20th hours of fermentation added volatile fatty acids (VFAs) that serves as a precursor in the production of PHA. Aerobic fermentation of *Ralstonia eutropha* JMP 134 with the substrate glucose and fructose using synthetic VFAs produce PHA content of each were 0.21 and 0.33 g PHA/g dry cell weight (DCW). The percentage composition PHA of glucose or fructose with synthetic ALV are 8.71% or 11.78% HV, respectively. So *Ralstonia eutropha* JMP 134 fermentation using fructose substrate provides a higher PHA content than using glucose substrate.

Keywords: Polyhydroxyalkanoate (PHA), Fructose, Glucose, palm oil mill effluent (POME), *Ralstonia eutropha* JMP 134, Volatile Fatty Acid (VFAs)