OPTIMASI VARIASI *CO-SUBSTRAT* LIMBAH KULIT PISANG RAJA DAN *VINASSE* BERBASIS SISTEM KONTINYU SEBAGAI UPAYA PENINGKATAN PRODUKSI BIOHIDROGEN

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ABSTRACT

Banana peel waste contains complex carbohydrates, while vinasse contains nutrients such as potassium, sulfur, and nitrogen, so both have great potential to be used as co-substrate raw materials for optimizing biohydrogen production through continuous dark fermentation systems. The purpose of this study was to analyze the effect of continuous systems and a combination of substrate consortiums from both wastes on increasing biohydrogen volume and Volatile Solid (VS) levels. This study tested three variations of substrate ratios (70:30, 60:40, 50:50) on two test parameters, namely the volume of biohydrogen produced and the Volatile Solid (VS) levels. Data processing was carried out using the Response Surface Methodology (RSM) method and ANOVA tests on the Minitab 21 application for data analysis. The test results showed that the optimum production conditions were obtained at a substrate variation of 70:30, which was able to produce a hydrogen gas volume of 9 ml H2/L reactor and a VS level of 90.67212%. This indicates that continuous biohydrogen production with a substrate consortium can increase production efficiency.

Key Words*: Biohydrogen, Banana Peel, Consortium, Continuous, Dark Fermentation, Substrate, Vinasse.*