

Nihayatul Bariroh, 2017. The Utilization of Vegetable and Fruit Waste Extract From Pasar Agrobis Babat Lamongan Regency as Substrate for Ethanol Bioconversion by *Zymomonas mobilis*. This thesis was under supervision of Drs. Agus Supriyanto, M.Kes. and Tri Nurhariyati, S.Si, M.Kes. Departement of Biology, Faculty of Science and Technology, Airlangga University, Surabaya.

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### **ABSTRACT**

*This study was aimed to determine effect of variation of vegetable and fruit extract concentration, length of fermentation time, and combination between both to ethanol concentration produced. Ethanol fermentation used extract of vegetable and fruit waste from Pasar Agrobis Babat Lamongan Regency added with 10% Zymomonas mobilis. This experiment was research designed with 4 x 4 factorial and 3 replications. There were 4 level of extract concentration used (25, 50, 75, and 100%) and 4 durations of fermentation time (3, 6, 9, and 12 days). Resulted ethanol level was measured using Pycnometri Method. Data of ethanol level was analyzed statistically Brown-Forsythe test, continued to Games-Howel test to determine difference between two groups. Variation of vegetable and fruit waste extract concentration found to affect ethanol level produced, with highest ethanol concentration produced from 100% waste extract concentration, which was 7,74%. The variations of fermentation time also affected ethanol level produced, with the highest ethanol concentration was produced from 12 days of fermentation, which was 8,69%. Combination between variations of extract concentration and fermentation time affected the level of ethanol produced, with highest ethanol concentration found from combination of 100% waste extract and 9 days of fermentation, which was 10,28%.*

**Keyword** : Bioconversion, Ethanol, Fermentation, Waste, Zymomonas mobilis.