

Supawitta Suwannapate 2008: Continuous Fermentation for Vinegar Production from Pineapple Wine. Master of Science (Biotechnology), Major Field: Biotechnology, Department of Biotechnology. Thesis Advisor: Associate Professor Sarote Sirisansaneeyakul, Dr.rer.nat. 141 pages.

Continuous fermentation for vinegar (acetic acid) production from pineapple wine by the selected *Acetobacter aceti* 5 species including *A. aceti* TISTR 522, 086, 107, 102 and IFRPD were studied. From the experiment, it was found that *A. aceti* IFRPD and *A. aceti* 102 can produce the highest acetic acid at 21.04 g/l and 12.5 g/l, respectively.

Taguchi method at 4 factors and 3 levels was used to find the optimal conditions for acetic acid production. It was found that the optimal conditions were mixed microorganisms of *A. aceti* TISTR 102 and *A. aceti* IFRPD in the ratio of 1:1, initial alcohol concentration of 8%, initial pH of pineapple wine of 5.5 and incubated temperature of 30 °C. This condition produced the highest acetic acid of 42.37 g/l and acetic acid productivity of 0.80 g/l h. Acetic acid was produced in a fermentor under this optimized condition. The maximum acetic acid concentration was 48.08 g/l and acetic acid productivity was 0.60 g/l h.

Acetic acid was produced from pineapple wine by continuous fermentation. The study of dilution rate found that optimized dilution rate was 0.05 h^{-1} and the acetic acid productivity was 0.93 g/l h. Furthermore this fermentation can produce acetic acid at 18.63 g/l at steady state. From the sensory evaluation of vinegar beverage with 4 types of sweetener (maltitol, fructooligosaccharide, xylitol and honey) at 7% w/v, it was found that the average score was between 4 and 6. The beverage mixed with fructooligosaccharide gave the highest score and with no significant difference on beverage mixed with maltitol. It was, however had significant difference on fermented vinegar beverage mixed with xylitol and honey.

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