

## ABSTRACT

### **Bioethanol Production from Waste Leaves Around Andalas University by Simultaneous Sacharification Fermentation (SSF) Method**

By

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In this research, cellulose from waste leaves are converted into ethanol by SSF technology using cellulase from *Trichoderma viride* strain T1 sk. In saccharification process, cellulase breaks cellulose polymer into glucose. Simultaneously, the formed glucose is converted into ethanol by invertase produced by *Saccharomyces cerevisiae* which is grown on YPD medium. Waste leaves are pretreated using basic solutions : basic NaOH 1 %, NH<sub>4</sub>OH 8 %, NaOH 1 % + NH<sub>4</sub>OH 4 % and NaOH 1 % + NH<sub>4</sub>OH 8 % with ratio of solid matter (sample) : liquid (basic solution) 1:10 (w/v) with volume of basic solution 100 mL. Immersion time is varied for 24, 48 and 72 hours on 50<sup>0</sup>C. The result of research shows that the use of NaOH 1% + NH<sub>4</sub>OH 4% gives the highest glucose concentration 933,75 µg/mL with immersion time for 72 hours on 50<sup>0</sup>C. After being pretreated, sample of 0,4 g waste leaves produce the highest glucose concentration. Measurement by GC/MS shows ethanol concentration 62,41% on fermentation time 96 hours with volume of ethanol 2,45 mL for 0,4 g sample.

Keywords : Waste leaves, *Pretreatment*, *Trichoderma viride* strain T1 sk, SSF, Bioethanol