

## Comparasion of iles-iles and cassava tubers as a *Saccharomyces cerevisiae* substrate fermentation for bioethanol production

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### Abstrak

Kusmiyati (2010) Comparasion of iles-iles and cassava tubers as a *Saccharomyces cerevisiae* substrate fermentation for bioethanol production. Nusantara Bioscience 2: 7-13. The production of bioethanol increase rapidly because it is renewable energy that can be used to solve energy crisis caused by the depleting of fossil oil. The large scale production bioethanol in industry generally use feedstock such as sugarcane, corn, and cassava that are also required as food resouces. Therefore, many studies on the bioethanol process concerned with the use raw materials that were not competing with food supply. One of the alternative feedstock able to utilize for bioethanol production is the starchy material that available locally namely iles-iles (*Amorphophallus mueller Blum*). The contain of carbohydrate in the iles-iles tubers is around 71.12 % which is slightly lower as compared to cassava tuber (83,47%). The effect of various starting material, starch concentration, pH, fermentation time were studied. The conversion of starchy material to ethanol have three steps, liquefaction and saccharification were conducted using  $\alpha$ -amylase and amyloglucosidase then fermentation by yeast *S.cerevisiaie*. The highest bioethanol was obtained at following variables starch:water ratio=1:4 ;liquefaction with 0.40 mL  $\alpha$ -amylase (4h); saccharification with 0.40 mL amyloglucosidase (40h); fermentation with 10 mL *S.cerevisiae* (72h) producing bioethanol 69,81 g/L from cassava while 53,49 g/L from iles-iles tuber. At the optimum condition, total sugar produced was 33,431 g/L from cassava while 16,175 g/L from iles-iles tuber. The effect of pH revealed that the best ethanol produced was obtained at pH 5.5 during fermentation occurred for both cassava and iles-iles tubers. From the results studied shows that iles-iles tuber is promising feedstock because it is producing bioethanol almost similarly compared to cassava.