Sakarifikasi dan fermentasi Bagas menjadi Ethanol menggunakan Enzim Selulase dan Enzim Sellobiase

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Abstrak

The bioetanol development from biomass bases of lignocellulose like bagasse is one of alternative energy which has potential to be applied in Indonesia. Beside of raw material source that is so many in our country, the process is also environmentally friendly. Conversion of bagasse becomes etanol using Simultaneous Sacharification and Fermentation (SSH technology by cellulose and cellobiase enzyme had been done on this research. Sacharification process or hydrolysis process, cellulose enzyme will break cellulose polymer becomes glucose whereas cellobiose enzyme will break cellobiose becomes glucose.

Then, glucose through fermentation is changed to etanol by using yeast Saccharomyces cerevisiae. The variations include pH of system that is pH 4' ; 4,5 and 5, HCI addition low concentrated HCI at pH 5 with variation of concentration that is 0,5 % and I %, also variation of sample at pH 5 where bagasse without pretreatment is compared with bagasse which had been done pretreatment by using fungi Lentinus edodes for 4 weeks.

The result shows that the use of cellulose and cellobiase enzyme with system optimum condition pH 5 produce etanol concentration is higher than using only cellulose enzyme at the same pH condition. For substrate concentration 50 g/L, on the use of cellulose and cellobiase, the highest etanol concentration which is produced bagasse without pretreatment is 5,62 g/L or li,24 % from bagasse. On HCI addition, the highest etanol concentration is produced by concentration HCI i % with amount 6,52 g/L or 13,04 % from bagasse. With bagasse L. edodes and P. ostreatus 6 weelts, the highest etanol concentration that is 6 86 g/L and 6,50 g/L or 13, 72% and l2,99% from bagasse. It also shows that HCl addition low concentrated and pretreatment by white rot fungi L. edodes and P. ostreatus can increase the etanol quantity that is produced from bagasse conversion.