

Optimization of fermentation process for Ethanol Production Rice straw by saccharomyces cerevisiae

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Abstract Introduction Rice straw is one of lignocellulosic waste that is abundant in the world .In this study, using pre-treated rice bran and cellulose for ethanol production and a source was used. **Methods** The compounds H₃PO₄, HCL, HNO₃, H₂SO₄, NaOH to determine their effect on the structure of cellulose substrate.The best performance in terms of degradation of cellulose by quantitative determination of glucose (DNS) was determined The most porous substrate was exposed to the cellulase enzyme and enzyme process was done Saccharification.And then reducing sugar production and activity of enzymes, enzyme Saccharification process was optimized using Design Expert software **Results** The effect of treatment with H₃PO₄, HCl, HNO₃, H₂SO₄, NaOH showed the highest reducing sugar production (using DNS) of rice straw is treated with HNO₃. According **Results of analysis of XRD** An increase in the crystallinity of cellulose was observed in rice bran pretreated with HNO₃.The results of SEM showed the comparison between before and after pre-treatment rice straw structure and a smooth and firm and regular structure for the untreat rice straw, while pre-treatment caused changes in the structure.Pre-treatment analyzed structure and it made the non-uniform and uneven and rough substrate, lost some of components of the outer surface. **Conclusion** Aspergillus fungi show better growth in rice straw substrate.The result of this study indicate that studied agricultural waste is rice straw waste substrates that it is suitable for producing and optimizing of ethanol.

Keywords : Key words: Rice Straw, Pre-treatment, Aspergillus Fungi, Ethanol Production

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