

Compositional analysis of lignocellulosic biomass a comparative study for biofuel application

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Abstract: Modern world is facing two vital changes: energy crisis and environmental pollution. Approximately 80% of world energy supplies rely on rapidly exhausting nonrenewable fossil fuel. At the current rate of consumption, oil reserves, natural gas and coal were expected to last for around 14.9, 44.4, 137 years, respectively. The combustion these fuels release greenhouse gases which effects the environment. Bioethanol is an alternative for petrol and blending of the ethanol with petrol reduce the emissions and oil dependency. Due to shortfalls in the molasses supply first generation (1G) bioethanol unable to meet the ethanol blending mandates (20% target by 2030). Lignocellulosic biomass is best alternative for bioethanol production. Pretreatment and saccharification are key steps for the ethanol production which effects final cost of the bioethanol. To predict the effectiveness of the pretreatment biomass compositional analysis a key parameter. In this study we used different parts of corncob (outer ring, pith, whole cob) for comparison of composition using different analytical techniques. Similar glucan percentage observed in pith and whole (47%) but there is a difference in hemicellulose and lignin percentages. Which reveals that middle pith composition varying from outer ring. This concludes that pretreatment can be tailor made between these two parts which enables the improvements in process economics and sugar recovery.

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