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Water hyacinth as potential feedstock for bioethanol production

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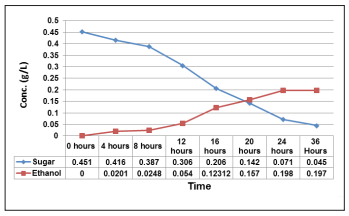

	0 hours	4 hours	8 hours	12 hours	16 hours	20 hours	24 hours	36 Hours
Sugar	0.451	0.416	0.387	0.306	0.206	0.142	0.071	0.045
Ethanol	0	0.0201	0.0248	0.054	0.12312	0.157	0.198	0.197

The noxious aquatic weed *Eichhornia crassipes* has been investigated as a potential feedstock for bioethanol biomass. Possessing a rich sugar composition of 18% cellulose, 48% hemicellulose and 3.5% lignin, water hyacinth is quite responsive to acid pretreatment hydrolysis (3% H_2SO_4 for 1.5 hours at 121 °C) to yield up to 39.1 mg/100 mL sugars. A comparative study of fermentation by yeasts from three different sources, viz., Four Seasons Yeast (FSY; obtained from a yeast firm), Commercial baker's yeast (wet) and Yeast extract powder revealed that FSY, when used on 3% sugar hydrolysate from 1:10 WHB (Water Hyacinth Biomass) yielded a peak ethanol production of 0.198 g/L. This was corroborated by the time course utilization of sugar hydrolysate. The efficiency of yeasts was found in the order FSY>Baker's Yeast>Yeast Extract. With exceptionally high biomass productivity, this weed can act as an excellent renewable feedstock for bioethanol production. In addition, it can also significantly contribute towards low cost waste disposal of this weed as it is choking the river Yamuna and other water bodies, depleting their water quality.

Biography

Aprajita Chauhan has been teaching Organic Chemistry at Sri Aurobindo College, University of Delhi for the past 23 years. Her research interests range from environmental chemistry to alternative fuels like biodiesel and bioethanol. She is currently engaged in investigating various waste biomass sources as a potential feedstock for bioethanol production.

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