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Biogas production potential of algae through codigestion with cow dung

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The production of energy from algal biomass is not yet a commercial reality. This still requires long term research. The situation is better when it comes to the production of biogas under anaerobic digestion. Moreover, the biochemical composition (polysaccharide, lipid, protein contents) of algae makes it favorable substrate for anaerobic digestion. Hence, the present study was focused on evaluating the biogas production potential of *Chroococcu*s sp. The selected alga was found to have biogas production potential of around 487 m^3biogas Kg^{-1} VS. Although the biogas potential of selected algae was in line with the values reported in literature, the C/N ratio of selected algae (8.0 – 9.0) was not optimal for anaerobic digestion. Hence, further attempts were made in order to examine the effect of balancing the C/N ratio by using suitable co-substrate. Fresh cow dung (C/N ≈ 32.0 – 35.0) in 1:1 ratio (on VS basis) was used as co-substrate in order to raise the C/N to optimal value reported in literature (≈ 20.0). The resultant biogas yield from the co-digestion was 590 m^3biogas Kg^{-1} VS added, which was more than 20% higher than the value obtained with fresh algae alone. The lab scale results indicated that algae have good potential for biogas generation. Moreover, co-digestion has synergistic effect on process performance. However, further scale up and optimization is needed to make the algal biogas generation more feasible on sustainable basis.

Biography

Sanjeev Kumar Prajapati completed his Graduation (B.E) in Biochemical Engineering from Kumaon University, Nainital, India and obtained Master degree (M. Tech) in Biotechnology from Centre for Biotechnology, Anna University, Chennai (India). He is currently working as Ph.D. scholar at Indian Institute of Technology Delhi, India. His research interest includes anaerobic digestion, algal bioenergy and phycoremediation.

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