

Sustainable Bioconversion of Food Waste into Energy by Immobilized Biocatalysts a Sustainable Method to Meet Future Challenges- A Review

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ABSTRACT

Over the past few years energy crisis has been a matter of great concern. With the ever-increasing population meeting the energy needs of all has become challenging. Another aspect which has gained much attention from the national and international organizations is the increasing amount of food waste; it has intensified and is a major environmental, social and economic concern. In this review, we present an overview of using food waste sustainably and transforming it into sources of energy. Food wastes are rich in lipids, carbohydrates and proteins and hold significant potential for bioconversion into a variety of energy sources without any harmful end products. Food waste are generated in plenty and are indeed a rich source of sugar and fats and when enzymes act on these biomolecules, food waste is turned into value added products such as biodiesel, bioethanol, biogas which are in great demand. Industries wish to produce zero waste and meet their energy demands on their own in a greener and renewable way. Therefore, using enzymes as industrial biocatalysts will help in biocatalysis of green reactions which will help in sustainable and renewable manufacture of bioenergy making the process green, economic and viable. Immobilization of these biocatalysts additionally renders the advantage of making the enzyme more structurally stable, efficient, and reusable. Immobilisation also enables the biocatalyst to be employed in extreme pH, pressure, temperature and high substrate concentrations. Thus, making it more industrial friendly.

Keywords: Food industry waste; Green biotechnology ; Biocatalyst Immobilization; Biocatalysis; Bioenergy

