



## Production of Biofuel through Cellulose Fermentation

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### DESCRIPTION

Biofuel is a type of energy derived from renewable plant and animal materials. Examples of biofuels include ethanol, biodiesel, green diesel (derived from algae and other plant sources) and biogas (methane) derived from animal manure and other digested organic material. Biofuels are most useful in liquid or gas form because they are easier to transport, deliver and burn. Economically feasible and eco-friendly renewable energy fuels are obtained for the utilization of biomass of agricultural crops or biological wastes are good source of bioenergies. Bioenergy is energy derived from biofuels which are produced directly or indirectly from organic material including plant materials and animal wastes. Overall bioenergy covers approximately 10% of the total world energy demand. Traditional unprocessed biomass such as fuel wood, charcoal and animal dung accounts for most of the main source of energy for large number of people in developing countries who use it mainly for cooking and heating. Most advanced and efficient conversion technologies now allow the extraction of biofuels from materials such as wood, crops and waste material. Biofuels can be solid, gaseous or liquid forms of energy, even though the term is often used in the literature in a narrow sense to refer only liquid biofuels for transport.

Biofuels may be derived from agricultural crops, including conventional food plants or from special energy crops. Biofuels could also be derived from forestry, agricultural or fishery products or municipal wastes, as well as from agro-industry, food industry and food service by-products and wastes. A distinction is made between primary and secondary biofuels. In the case of primary biofuels, such as fuel wood, wood chips and pellets,

organic materials are used in an unprocessed form, primarily for heating, cooking or electricity production. The cellulosic content in vegetables and fruits peels are ranges from 1 to 25%. In seeds, it ranges about 12%. And in agricultural residues, it range from 33% to 57% wood ranges from 41 to 53% flax and hemp have about 70% cellulose and cotton has about 95% cellulose. The free sugars like glucose, fructose and sucrose are majorly present in these cellulosic waste materials. Although large number of microorganisms that are capable of degrading cellulose in their simple sugar and convert it into bioethanol. Microorganisms are capable of producing ethanol from different carbon sources which has cellulose, glucose, fructose and sucrose produce ethanol directly or through the acid or enzyme.

### CONCLUSION

These cellulosic waste materials are a carbonaceous, fibrous solid waste which encounters disposal problem and is generally used for its fuel value. This information faces the ways for the possible and potential utilization of different cellulosic wastes, which are often discarded as wastes, into value added products such as enzymes and other derivatives. Enzymes are macromolecular biological catalysts. Enzymes accelerate chemical reactions. The molecules upon which enzymes may act are called substrates and the enzyme converts the substrates into different molecules known as products. Almost all metabolic processes in the cell need enzymes to occur at rates fast enough to sustain life. Metabolic pathways depend upon enzymes to catalyze individual steps. Enzymes are considered as a potential biocatalyst for large number of reactions. Particularly, the microbial enzymes have widespread uses in industries and medicine.

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