



## Bioethanol: A revolutionary biofuel in future

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Recently, the demand for the price amount of crude oil, coal and natural gas are increased. The availability of fossil fuels is decreased day by day. The people of this modern era travels towards the advanced features of this generation. During this journey the people of this decades met several obstacles such as population explosion, pollution, and several factors. The major air pollution caused by incomplete combustion of a fossil fuel by transportation. By doing this process release of harmful gases such as carbon monoxide, carbon dioxide into the atmosphere. The gas which is accumulated in air by repeating the process.

The gas which can cause severe ill effects to the humans and other living organisms in this biosphere. By overcoming these issues and avoid such kind of problems in future the fellows of the science discipline have planned to discover the biofuel. Which is an alternative source of ordinary fuels.

The production of alternative fuel from the organic feed stock, plant waste, kitchen waste, etc. The cost of production is very cheap. The main feed stock for the production of bioethanol is the harvesting degradable bio waste form the cultivating fields. the residual wastes include wheat straw, rice straw, bagasse, cotton stalk, wheat bran, wood pulp, paper, corn cob, Sugarcane bagasse, ground nut shell, sweet potato, green peas, etc. Reasons for selection of the raw materials are presence of enormous amount of cellulose biomass which is incorporated into the materials.

The biomass which is used for the production of biofriendly fuel. The biomass present in the materials is in complex structures so pretreatment of substrate is needed to free up the mass. Later it can be subjected to fermentation process. The fermentation processes are mediated by

microorganisms. The organisms which can break down the cellulose content and convert it into ethanol. The crude ethanol is further subjected to distillation to get an ecofriendly energy source.

The engineered organisms used for ferment the sugar compound in the substrates are trichonympha, clostridium, actinomycetes, bacterioids, succinogenes, ruminococcus albus, methanobrevibacter, etc.

The method used for the production of socioeconomic fuel are substrate pre- treatment, inoculum preparation of respective microorganisms, selection of suitable fermentation method, distillation and purification process.

The nature of the socioeconomic fuel goes on generation updating. The fuel which can be evolved from generation to generation. The present generation of the fuel is represented as fourth generation. The application and features of the fuel are improved by the scientists and the substrates composition and selection of raw materials are advanced in behavior.

The edible raw materials are used for the production of first-generation fuel. The non-edible raw materials are used for the production of second to fourth generation fuels. Several beneficial habits have been identified for each generation, such as the management of raw material overproduction (1G), production of renewable energy (all four generations), and lower GHG emissions compared to gasoline (also all four generations). However, their disadvantages cannot be ignored, such as sustainability problems for the 1G (ethanol vs. food), significant energy and water consumption for the 2G, energy demand and unfavorable nitrogen balance for the 3G, and expensive, as well as energy-intensive, production for the 4G.

In USA respective biofuel production can cause several sustainable problems such as: air quality, water quality, soil quality, water availability. The issues are in concern with this production of ecological fuel.

The benefits of this eco fuel are capable of releasing the co<sub>2</sub> in atmosphere is much less when compared to the ordinary fuels. By using this friendly fuel biosphere had attain a marvelous chance and air pollution will decrease in respective manner. This editorial gives a knowledge about to march against the future problems of fuel fluctuation and gives you an innovative idea to use a revolutionary fuels.

## Reference

Mashair Anwar Saeed, Hongzhi Ma, Siyuan Yue, Qunhui Wang, and Maobing Tu, Concise review on ethanol production from food waste: development and sustainability. *Environmental Science and Pollution Research*, 14 August 2018.

S. Kent Hoekman, Amber Broch, and Xiaowei (Vivian) Liu, Division of Atmospheric Sciences, Desert Research Institute (DRI), 2215 Raggio Parkway, Reno, NV 89512, USA.

K. Pandiyan, Arjun Singh, Surender Singh, Anil Kumar Saxena, Lata Nain, Technological interventions for utilization of crop residues and weedy biomass for second generation bio-ethanol production, *Renewable Energy* (2018).

Tse, T.J.; Wiens, D.J.; Reaney, M.J.T. Production of Bioethanol—A Review of Factors Affecting Ethanol Yield. *Fermentation* 2021, 7, 268.

Mizik, T. Economic Aspects and Sustainability of Ethanol Production—A Systematic Literature Review. *Energies* 2021, 14, 6137.

Srija Sur<sup>1</sup>, Vivek Dave<sup>2</sup>, Anand Prakesh<sup>3</sup> and Prashansa Sharma, Food processing engineering, Expansion and scale up of technology for ethanol production based on the concept of biorefinery, 16 September 2020.