PROJECT REPORT ON

AN INVESTIGATION INTO PRODUCTION OF BIOETHANOL FROM UNCONVENTIONAL SOURCES

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In 1925, Henry Ford had quoted ethyl alcohol, ethanol, as "the fuel of the future." He furthermore stated, "The fuel of the future is going to come from apples, weeds, sawdust – almost anything. There is fuel in every bit of vegetable matter that can be fermented." Today Henry Ford's futuristic vision significance can be easily understood. In the current time, the importance of alternative energy source has become even more necessary not only due to the continuous depletion of limited fossil fuel stock but also for the safe and better environment, with an inevitable depletion of the world's energy supply, there has been an increasing worldwide interest in alternative sources of energy [31,45,70,104,109,194].

Ethyl alcohol is a colourless fluid completely soluble in water. Highly inflammable, it has been used as motor vehicle fuel for decades. Indeed, the Energy Policy Act (USA, 1992) recognizes and defines it as an alternative fuel and in several Countries it has become a potential rival to conventional fuels, being used to power ships, buses and heavy duty engines. Though ethanol is more costly to produce than petrol, the ever-increasing price of oil and the need to make more use of energy resources that meet our planet's own need for sustainable development are focusing attention on the search for competitively costing ways of producing biofuels. Most ethanol is produced by the natural fermentation of sugars derived, directly or indirectly, from vegetable biomass (hydrolyzed starch, cellulose and hemicellulose), only 7% being synthesized from coal or oil [16]. Since ethanol is produced almost entirely from renewable resources, it looks like a viable alternative to conventional fuels: in fact, any CO2 emissions generated by its use would be reabsorbed by the crops planted for its production, thereby helping us to achieve the CO2 emission targets established by the international agreements, such the Kyoto protocols. Table 1.1 and 1.2 list some significant chemical and physical properties of ethanol and compares them with those of other fuels.