

Production of Bioethanol Production from Sunflower Waste using *Zymomonasmobilis*

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Abstract—*In the current scenario, the transportation sector is almost dependent on petroleum-based fuel. Biofuels represent an alternative to petroleum-based fuel; in particular, bioethanol is the most widely used biofuel (blended with petroleum) for transportation. The increase in the prices of fuel and possibility of shortfalls has led to an extensive evaluation of alternative sources of energy to meet the global energy demand. Ethanol is one of the good sources of liquid energy for automobiles and industries. Among the liquid fuels, ethanol is used as an alternative to petroleum by blending with petrol with a range of 5 to 20% (v/v). To reach the future demand of ethanol, it should be produced in high quantity from the agricultural raw materials. Thus, we are interested in production of ethanol from sunflower waste (as substrate) and optimizing the bioprocess for higher yields of ethanol. The various pretreatment methods viz., the acid hydrolysis, alkali hydrolysis, and steaming resulted in the significant release of fermentable sugars from the sunflower waste. *Zymomonasmobilis* (gram negative) has emerged as a potential bacterium for ethanol production. The present investigation was undertaken to optimize the fermentation parameters and finally to study the ethanol production from the hydrolysate of sunflower waste. The maximum ethanol production (19.43 g/L) was obtained at a substrate concentration of 6% (v/v) at pH 6.2. We are in the process of enhancement of ethanol production using p-diethylaminobenzaldehyde as inhibitor for acetaldehyde dehydrogenase under anaerobic conditions.*