

Generation Of Value-Added Products from Potato Peels

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Abstract : Potatoes are highly consumed in the country like Nepal. A huge amount of potato peels accumulated daily in households, restaurants and industries. Production of value-added products by degrading waste is a key work in the context of the country where the gross domestic product (GDP) of people is very low. In this study, potato peels are efficiently degraded into various value-added products by electrochemical fermentation of *Aspergillus niger* (amylase and pectinase-producing strain) which can be a sustainable and economic strategy for solid waste management and product generation. The highest OCV observed in the electrochemical cell using KMnO_4 in catholyte was $1586 \pm 63 \text{ mV/m}^3$ with anode graphite electrode-coated multi-walled carbon nanotubes. The system in fed-batch mode was found to enhance the performance by adding 10% of the liquid sample every 24 hours. The power density observed with 100-ohm and 1000-ohm external resistors was $119 \pm 7 \text{ W/m}^3$ and $42 \pm 9 \text{ W/m}^3$, respectively. From the operation at an optimized condition removal rate of COD, ammoniacal-nitrogen, reducing sugar, and TSS were 37.69%, 67.72%, 72.64%, and 65.95%, respectively. Various value-added products were found to be generated from waste samples, i.e., citric acid, succinic acid, glucose, fructose, propionic acid, etc, with electricity as alternative energy.

Keywords : OCV, potato peels, value added products, electrochemical

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