

Cell free biosystem and bioethanol production using WBFB as feed stock

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Simultaneous saccharification and fermentation (SSF) can enhance the bioethanol production at relatively lower cost. The successful SSF operation requires either the survival of live cells at higher temperature or the activity of cell enzyme at the expense of live cells. Present study produces initiative towards the mechanism of cell degradation, activity of cell enzymes and the production of bioethanol using waste of beer fermentation broth (WBFB). WBFB is not only a rich source of saccharides and peptides but also possess relatively weak but active yeast culture involved in sugar fermentation to ethanol. Microscopic picture revealed that the yeast cells lost their viability at higher temperature due to cell wall degradation and all internal cell matrixes were secreted into the surrounding media. Despite of cell wall degradation, ethanol was produced continuously in a culture broth. This indicated certain role of yeast cell body enzyme that remained active even after yeast cell death. The study opens a way for the future prospects of bio-products via cell free enzyme concept.