Identification and characterization of yeast glycolytic and fermentation enzymes in yeast cell-free lysate

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Previously cell-free system was evaluated for production of bioproducts; proteinous (antibiotics, vaccines, harmones) and non-proteinous (biofuels). It is advantageous over whole-cell as it bypasses growth inhibition by inhibitors such as glucose and ethanol in yeast fermentation. Aim of current study was to develop yeast cell-free enzyme system and characterize it for the presence of both glycolytic and fermentation enzymes. The system was developed via bead beating of yeast whole-cells. The existence of yeast glycolytic and fermentation enzymes in cell-free lysate was confirmed through SDS-PAGE and LC-MS/MS Q-TOF analysis. Besides glycolytic and fermentation enzymes, yeast cell-lysate contained adequate concentrations of cofactors (ATP, NADH) required for initiation of fermentation process. Enzymes activities were confirmed through glucose fermentation capabilities in absence of live yeast cells. The current study will add new dimensions to the future research of various biofuels production through this system.