

Utilization of Whey for the Production of β -Galactosidase Using Yeast and Fungal Culture

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Abstract : Whey is the lactose rich by-product of the dairy industry, having good amount of nutrient reservoir. Most abundant nutrients are lactose, soluble proteins, lipids and mineral salts. Disposing of whey by most of milk plants which do not have proper pre-treatment system is the major issue. As a result of which, there can be significant loss of potential food and energy source. Thus, whey has been explored as the substrate for the synthesis of different value added products such as enzymes. β -galactosidase is one of the important enzymes and has become the major focus of research due to its ability to catalyze both hydrolytic as well as transgalactosylation reaction simultaneously. The enzyme is widely used in dairy industry as it catalyzes the transformation of lactose to glucose and galactose, making it suitable for the lactose intolerant people. The enzyme is intracellular in both bacteria and yeast, whereas for molds, it has an extracellular location. The present work was carried to utilize the whey for the production of β -galactosidase enzyme using both yeast and fungal cultures. The yeast isolate *Kluyveromyces marxianus* WIG2 and various fungal strains have been used in the present study. Different disruption techniques have also been investigated for the extraction of the enzyme produced intracellularly from yeast cells. Among the different methods tested for the disruption of yeast cells, SDS-chloroform showed the maximum β -galactosidase activity. In case of the tested fungal cultures, *Aureobasidium pullulans* NCIM 1050, was observed to be the maximum extracellular enzyme producer.

Keywords : β -galactosidase, fungus, yeast, whey

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