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Review Article

Invertase and its applications – A brief review

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ABSTRACT

Invertase, also called beta-fructofuranosidase cleaving the terminal non-reducing beta-fructofuranoside residues, is a glycoprotein with an optimum pH 4.5 and stability at 50 °C. It is widely distributed in the biosphere especially in plants and microorganisms. *Saccharomyces cerevisiae* commonly called baker's yeast is the chief strain used for the production and purification of the enzyme. Invertase in nature exists in different isoforms. In yeasts, it is present either as extracellular Invertase or intracellular Invertase. In plants, there are three isoforms each differing in biochemical properties and subcellular locations. Invertase in plants is essential not only for metabolism but also help in osmoregulation, development and defence system. In humans, the enzyme acts as an immune booster, as an antioxidant, an antiseptic and helpful for bone cancer or stomach cancer patients in some cases. The present study focuses upon the Invertase along with its application and purification from *Saccharomyces cerevisiae*. Invertase from baker's yeast was purified by concentrating the crude extract with ammonium sulphate (70%), dialyzed using sample buffer (0.1 M Tris, pH 7.2) and followed by centrifugation. The resultant supernatant was then applied on DEAE-cellulose column equilibrated with Tris buffer. The enzyme was eluted with a step gradient of NaCl (0–0.5 M) in starting buffer. Fractions showing highest activity were pooled. The result contains the purification summary with the purification fold of 27.13 and recovery of 31.93%. For the better understanding the mechanism and structure of the purified enzyme characterization is essential.

1. Introduction

Enzymes are complex globular proteins found in living cells, acting as a bio-catalyst facilitating metabolic reactions in an organism's body. In 1878 Kuhne coined the term 'enzyme' from the Greek word, "enzumas", which refers to the leavening of bread by yeast. Enzymes catalytic nature is responsible for the functioning. It participates in a reaction without being consumed in the reaction, attaining a high rate of product formation by lowering down the Gibb's free energy (ΔG°) required for the reaction to occur.[1] Because of their specific nature enzymes can differentiate between chemicals with similar structures and can catalyze reactions over a wide range of temperatures (0–110 °C) and in

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