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A panorama of bacterial inulinases: Production, purification, characterization and industrial applications

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ABSTRACT

Inulinases are important hydrolysing enzymes which specifically act on β -2, 1 linkages of inulin to produce fructose or fructooligosaccharides. Fungi, yeasts and bacteria are the potent microbial sources of inulinases. The data on bacterial inulinases is scarce as compared to other microbial sources. Inulinases yield from bacteria is very less as compared to fungal and yeast sources of inulinases. Submerged fermentation (SmF) is the method of choice for the production of inulinases from bacterial sources. Moreover, inulin is a potent substrate for the production of inulinases in SmF. Many bacterial inulinases have been reported to display magnificent environment abiding features and variability in their biophysical and biochemical properties. These properties have attracted attention of many researchers towards exploring adverse ecological niches for more distinctive inulinase producing bacterial strains. Inulinases are substantially important in current biotechnological era due to their numerous industrial applications. High fructose syrup and fructooligosaccharides are two major industrial applications of inulinases. Additionally, there are many reports on the production of various metabolites like citric acid, lactic acid, ethanol, biofuels, butanediol etc. using mixed cultures of inulinase producing organisms with other microorganisms. The present review mainly envisages inulinase producing bacterial sources, inulinase production, purification, characterization and their applications.

Keywords: Inulinases, submerged fermentation, solid state fermentation, purification, high fructose syrup, fructooligosaccharides

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