

Levansucrase from *Zymomonas Mobilis* KIBGE-IB14: Production Optimization and Characterization for High Enzyme Yield

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Abstract : In recent years, significant progress has been made in discovering and developing new bacterial polysaccharides producing organisms possessing extremely functional properties. Levan is a natural biopolymer of fructose which is produced by transfructosylation reaction in the presence of levansucrase. It is one of the industrially promising enzymes that offer a variety of industrial applications in the field of cosmetics, foods and pharmaceuticals. Although levan has significant applications but the yield of levan produced is not equal to other biopolymers due to the inefficiency of producer microorganism. Among wide range of levansucrase producing microorganisms, *Zymomonas mobilis* is considered as a potential candidate for large scale production of this natural polysaccharide. The present investigation is concerned with the isolation of levansucrase producing natural isolate having maximum enzyme production. Furthermore, production parameters were optimized to get higher enzyme yield. Levansucrase was partially purified and characterized to study its applicability on industrial scale. The results of this study revealed that the bacterial strain *Z. mobilis* KIBGE-IB14 was the best producer of levansucrase. Bacterial growth and enzyme production was greatly influenced by physical and chemical parameters. Maximum levansucrase production was achieved after 24 hours of fermentation at 30°C using modified medium of pH-6.5. Contrary to other levansucrases, the one presented in the current study is able to produce high amount of products in relatively short period of time with optimum temperature at 35°C. Due to these advantages, this enzyme can be used on large scale for commercial production of levan and other important metabolites.

Keywords : levansucrase, metabolites, polysaccharides, transfructosylation

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