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TOPIC(s) : Enzyme discovery and engineering

Engineering Cyclodextrin Glycosyltransferase to favour higher Degree of polymerization products

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PURPOSE OF THE ABSTRACT

Cyclodextrin Glycosyltransferase (CGTase) is a member of GH13 family of enzyme used in the production of Cyclodextrin (CD). More recently CGTase is being used to for its ability to glycosylate substrates using CD as a donor molecule in a reaction called coupling. Coupling transfers the amount of glucose units found in a CD to the acceptor, however due to the multiple activities of CGTase a product distribution that favours low degree of polymerization (DP) products than the coupling products is attained.

In this study, a mutant of *Paenibacillus macerans* CGTase was engineered in the acceptor binding region to see the effect on product distribution. It was found that the mutation resulted in a relatively greater production of higher DP products. The results suggest that it is possible to engineer the CGTase enzyme to favour higher DP products, and presents a first step towards efficient enzymatic synthesis of higher DP products.

FIGURES

FIGURE 1

FIGURE 2

KEYWORDS

Directed evolution | Glycoscience | Carbohydrate active enzymes

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