



A novel Amylosucrase enzyme for efficient production of Turanose and Arbutin from Sucrose biomass

TECHNOLOGY AVAILABLE FOR TRANSFER

UNMET NEED AND OPPORTUNITY

Turanose is a reducing disaccharide and it is also a natural isomer of sucrose. It is a non-cariogenic and low calorigenic sugar with a low glycemic response and suppressive effect on lipid accumulation in the body. Considering the health benefits associated with low-calorie and un-fermentable sugar, Turanose is being promoted as a functional sugar substitute of the next generation exhibiting anti-obesity, anti-diabetes, and anti-inflammatory effect. It can be manufactured by chemical synthesis. However, chemical synthesis is slow and require large amount of energy. There is need for cost-effective production of functional sugar, Turanose.

TECHNOLOGY

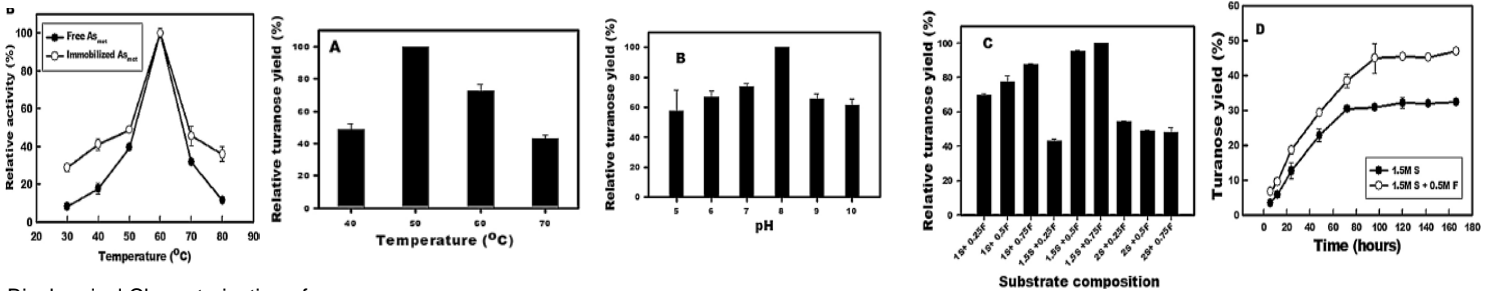
The present technology relates to a method for production of functional sugar (Turanose) from sucrose biomass employing a novel Amylosucrase enzyme identified from the metagenomic information of a thermal aquatic habitat. Till date no Amylosucrase gene has been reported from the metagenome of a hot water reservoir.

UNIQUE SELLING PROPOSITIONS

- Amylosucrase enzyme is functional and stable in the pH range of 5.0 to 10.0.
- Amylosucrase enzyme can catalyze Turanose biosynthesis in a wide range of temperatures, 30°C to 70°C with optimum transglucosylase activity at 50°C and 30°C, respectively.
- A bioconversion yield of 47% Turanose (at 50°C)
- Arbutin can be prepared by employing this enzyme using low-cost feedstocks table sugar, jaggery and muscovado.

STAGE OF DEVELOPMENT

The technology has been validated at the laboratory scale



Biochemical Characterization of Asmet at optimum temperature

The relative bioconversion yield of Asmet under different temperatures (A), pH (B), substrate composition (C), and turanose production yield (D). S=sucrose, F=fructose.

APPLICATION

The present technology is revolutionary as it involves novel extraction of Amylosucrase enzyme from the metagenomes of the thermal aquatic habitat and showing good market commercial potential in terms of characterization and use of enzymes in the industrial downstream processes. The enzyme can be used in the biosynthesis of Turanose which is an anti-obesity and anti-diabetic agent.

INTELLECTUAL PROPERTY

Indian Patent Granted

LICENSING OPPORTUNITY

BCIL is looking for suitable industrial partner for commercialization of this novel recombinant enzyme technology for the production of Turanose from low-cost feedstocks table sugar, jaggery and muscovado.

Reference:

1. <https://www.adroitmarketresearch.com/industry-reports/arbutin-market>
2. <https://www.futurewiseresearch.com/chemicals-market-research/Alpha-Arbutin-Market>

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