

## DBT scientists discover a new enzyme to produce a high-value functional sugar

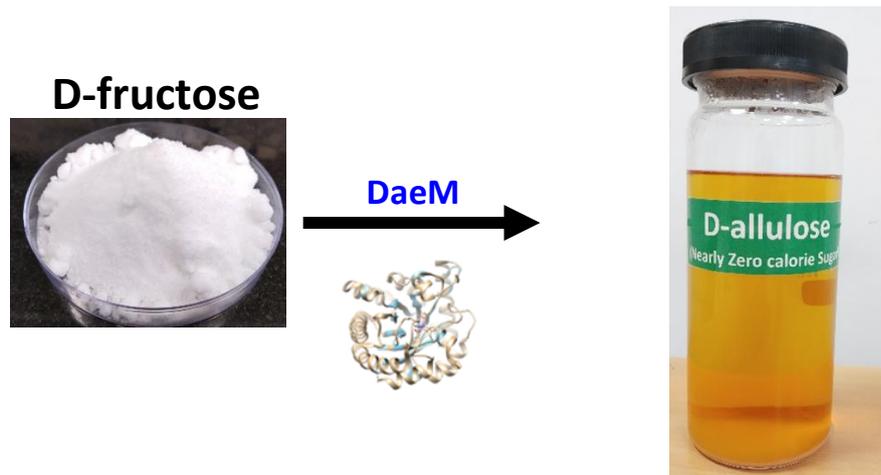


New Delhi, June 04: Over-consumption of caloric molecules generates multiple health issues, such as obesity and type 2 diabetes, which give rise to various complications. Biotransformation of caloric sugars into functional sugars of reduced calorie and additional health-benefits is currently in high demand.

D-allulose (or D-psicose) is a natural, biologically safe sweetener of rare abundance. It is a rare sugar in nature. It has 70% of the relative sweetness of table sugar. But, exerts only about 0.3% caloric of table sugar. Besides being a nearly zero calorie (or ultra-low calorie) sugar, it has been demonstrated to offer several additional health benefits such as anti-oxidative, anti-dyslipidemic, hypoglycemic, anti-obesity, anti-diabetic and neuroprotective effects. It is a safe sugar and has been accorded GRAS (Generally Recognized as Safe) status.

A team of scientists at the Department of Biotechnology's Center of Innovative and Applied Bioprocessing (DBT-CIAB) led by Dr Sudhir P. Singh and Mr. Satya Narayan Patel has discovered a novel D-allulose 3-epimerase gene (*daeM*) from a thermal aquatic habitat of extreme temperature. This gene is useful for biocatalytic biosynthesis of the high-value functional sugar, D-allulose. At protein level, this novel enzyme exhibits significant dissimilarity (>55%) with the D-allulose 3-epimerase proteins in the public database known

till date. This novel enzyme showed good thermal stability. In fact, it is the most thermal stable D-allulose 3-epimerase known till date. An Indian patent with number 201811023113 has been filed.



Website of DBT-CIAB: <http://www.ciab.res.in/>

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