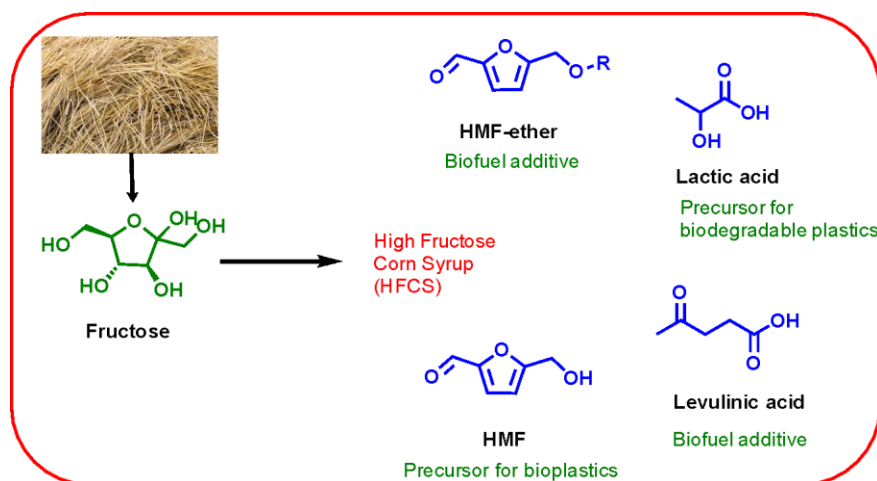


One pot process for development of fructose, a bio-based platform chemical from glucose

A group of scientists at the Center of Innovative and Applied Bioprocessing (CIAB) Mohali have developed a process in which an inexpensive alumina-based material was employed as a catalyst for the production of fructose in an alcohol. The process involves a one-pot approach for transforming glucose, derived from cellulosic biomass, to fructose in methanol. Transformation of glucose to fructose is one of the most important biocatalytic processes to produce high-fructose corn syrup (HFCS), as fructose is a sweetest dietary monosaccharide having the lowest glycemic index.



Fructose to value-added chemicals

Fructose is not only the sweetest molecule having huge application in the food industry but also has enormous application in the chemical industry as a crucial platform chemical. As biocatalyst has a narrow window of operating conditions, developing a robust heterogeneous catalyst thus becomes essential. In connection with this, a robust and simple catalyst was prepared based on economically available alumina. Alumina was treated under hot water condition, followed by a trace amount of tin incorporated to introduce the active sites.

At this point, alumina-based catalyst offered more than 30% of fructose which is comparable to the existing reports. However, this process needs to be improved to enhance the yield of fructose. The main focus of the study is to convert the cellulose-derived from rice straw- to fructose in an economically viable approach which is currently under investigation. These research findings

have been accomplished by a team of researchers at DBT-CIAB including Dr S. Saravanamurugan (Lead scientist) and Mr. Muhamad Aadil Yattoo. The work has been published in *journal Applied Catalysis A: General* 582 (2019) 117094.

Link: <https://www.sciencedirect.com/science/article/abs/pii/S0926860X19302418>

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