Evaluation of lignocellulosic biomass for xylitol bioproductcion

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Xylitol is a five-carbon sugar alcohol with established commercial uses in different healthcare sectors and especially as an alternative sweetener for diabetic persons. It is ranked among top 12 commercial bioproducts which as diverse pharmacological potentials such as antidiabetic, anticariogenic and anti-inflammatory. Other promising products such as chewing gum, confectionary, food & beverages, personal care, pharmaceuticals and nutraceuticals are expected to touch the global market share of US$1 billion by 2022. Xylitol can be synthesized either by chemical hydrogenation and enzymatic bio-transformation of purified substrate which is quite costly due to substrate limitation and high cost of purification. On the other hand biological treatment using microbes from various lignocellulosic residues from industries and agricultural practices could be the main focus for meaningful utilization of lignocellulosic biomass and cost reduction. More than 210 microbial isolates, isolated from soil samples (collected from different locations of Himachal Pradesh and Uttar Pradesh) screened from which 12 potential isolates were found positive. On the basis of higher enzyme activity and xylitol yield, *Pseudomonas gessardi* HPUVXlt-16 and *Candida guilliermondii* RLV was selected. From different lignocellulosic biomass, maximum sugar biotransformation and xylitol yield was recorded from bacterial isolates while *Canddia* yeast yield higher amount of ethanol yield. Microbes are not only able to degrade the complex polymeric structure of LCB but also their metabolic matrix allows the conversion of other sugars apart from xylose for xylitol production. Use of LCB on one hand would help in lowering the production cost while on other conserve the environment.

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