Title:	Studies of biomass converting enzymes and engineering design of bi-functional fusion construct
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Abstract:	Biomass includes all of the earth's living matter, plants and animals, and the remains of this living matter. One of the most abundant organic materials on earth is plant biomass. There is a wide range of microbial enzymes that has achieved different actions for biomass degradation in nature. Some of those enzymes which break down the plant biomass are endoglucanases and cellulases that act synergistically for subsequent hydrolytic reactions. The enzymes that have garnered relatively more attention are those that can withstand high temperatures, i.e., are thermostable. Using seven thermostable enzymes of different origin, we aim to do a green approach for biomass degradation. Sweet corn and rice are widely distributed crops that generate agricultural wastes like corn cob and rice husk without significant commercial value. Their cell wall mainly consists of cellulose, hemicelluloses and lignin, which are complex polymers difficult to process. We show that these thermostable enzymes hydrolyze these biomass components into simple sugars. The successful visualization of these simple sugars was achieved by Thin Layer Chromatography (TLC). Colorimetric method like 3, 5-Dinitrosalicylic acid assay was carried out to check the presence of reducing sugars. Later, we are creating a fusion construct using these thermostable enzymes for better degradation of biomass. In this study we are genetically fusing BSX XYLANASE-ThtLAC, using the flexible linker having a sequence of (Gly- Gly- Gly- Gly-Ser) . This construct will have a potential role in improving delignification of hydrolyzed plant biomass, and for bleaching of pulp for paper industry.
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