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Characterization of a Potential Thermostable Endoglucanase I from *Fusarium oxysporum* and Possible Application in Bioethanol Production

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Effective bioconversion of lignocellulosic biomass into soluble sugars for bioethanol production requires use of thermostable and highly active cellulases. Lignocellulose is the most abundant biopolymer on earth and it is a good renewable energy source. Thermostable enzymes have several benefits in various industrial applications. This research intends to predict computationally, and develop experimentally, a thermostable mutant endoglucanase that can operate at higher temperature as required by industrial processes. Our preliminary computational data based on rational design approach suggest that a quintuple mutant (T224E/G229A/S230F/S231E/N321R) of an endoglucanase from a pathogenic fungus, *Fusarium oxysporum,* can potentially remain active at higher temperature (80^{o}C) compared to its current operating temperature (<60^{o}C). In our effort to experimentally produce this quintuple mutant we have successfully produced few mutants via site directed mutagenesis. We are reporting here the characterization results of these mutants as compared to the wild type.

Keywords: Thermostable enzymes; Mutant endoglucanases; *Fusarium oxysporum*