ABSTRACT

Saccharification efficiency of cloned enzymes Endoglucanase, β-glucosidase, Endoxylanase and Exoglucanase was analyzed against different plant biomasses (Wheat, Bagasse, Bagasse 'B' and Rice). Different parameters were optimized to achieve highest percentage of saccharification. The optimal pH of the enzymes used in this study was 6.0 or 7.0 against synthetic substrates, however, more saccharification percentage, against plant biomass, was observed at pH (i.e., 5.0) other than their optimal pH. Among the biomass used, Bagasse 'B' and Wheat were more efficient than Rice and Bagasse. At temperature 80°C the highest saccharification was observed when buffer of pH 6.0 was used. Maximum saccharification (15.66%) was obtained with Wheat. Longer incubation time was not proven effective. However, when buffer of pH 5.0 was used it was found that temperature 85°C was more effective for release of reducing sugar. When Endoxylanase was used with Wheat and Bagasse 15.192% and 16.488%, respectively saccharification was obtained at 85°C, as compared to that at 80°C with 13.716% and 12.816%, respectively. More percent saccharification was observed at pH 5.0 rather than at pH 6.0 or 7.0. Endoxylanase showed 20.16% saccharification at pH 5.0 as compared to 14.04% saccharification with buffer of pH 6.0 against Wheat was as a substrate. Surfactant Triton X-100 was also used in present study to monitor its effects on saccharification rate. A minor increase in the saccharification percentage (16.2%) was observed by the use of 4% Triton X-100. When enzymes were used in combination the degree of synergism was found to reduce. When Endoxylanase was used alone 20.16% saccharification against Wheat was observed as compared to 16.96% saccharification when it was used in the form of cocktail.