Optimisation of lignin peroxidase production using locally isolated Pycnoporus sp. through factorial design

ABSTRACT

Lignin peroxidase has been extensively studied and has been reported to produce by white rot fungus. The highest lignin peroxidase producer from local isolates, identified as Pycnoporus sp. was selected for the optimisation study. Factorial design approach was significant to determine the optimum conditions that significantly influenced the production of lignin peroxidase by Pycnoporus sp. Several factors were selected in a range indicated by -1 and +1 for lower and upper level, respectively. The results of ANOVA were analysed to check for the significant factors. Optimum condition for the highest lignin peroxidase activity of 51.1 U L-1 was obtained at 24 mM of nitrogen concentration, agitation speed at 110 rpm, pH 3.5, inoculum concentration of 6x106 spores mL-1 and with the addition of inducer (veratryl alcohol). Considering the results obtained, this statistical design was effective in improving the lignin peroxidase production from Pycnoporus sp.

Keyword: Ligninolytic; Lignin peroxidase; Optimise; Pycnoporus sp.