
ABSTRACT

Solid substrate fermentation (SSF) of sago pith residue known as 'hampas' with *Pycnoporus sanguineus* for enzyme production was carried out. Good growth of *Pycnoporus sanguineus* in SSF was noted on 'hampas' supplemented with 0.38% urea, 0.2% KH_2PO_4 and 0.05% $\text{MgSO}_4 \cdot 7\text{H}_2\text{O}$ over a period of 30 days. Xylanase, lignin peroxidase and laccase activities were detected in *Pycnoporus sanguineus* cultures. Maximum xylanase and laccase activities of 5.26U/g of substrate on day 10 of SSF and 14.35U/g on day 15 of SSF of substrate were obtained respectively. The lignin peroxidase activity was less pronounced with an activity of 1.31U/g of substrate on day 10 of SSF.

An increase of 14.3% in xylanase activity and 5.9% in laccase activity were detected in cultures supplemented with urea of 0.57% (w/v) and 0.76% (w/v) respectively. With the 0.57% (w/v) of urea the xylanase activity reached a maximum of 6.01U/g of substrate on day 15 of SSF and with the 0.76% (w/v) of urea the laccase activity reached a maximum of 15.20U/g of substrate on day 15 of SSF.

Further investigation using optimum nitrogen levels showed that the xylanase and laccase activities were influenced by the inoculum age and density (w/w: weight of inoculum / weight of substrate) over a 20 days period of SSF. With 3-week-old inoculum the xylanase activity increased to 6.32U/g of substrate on the 10th day of fermentation. This activity is 20.2% more than the maximum activity of 5.26U/g obtained using the second week old inoculum. With the 3-week-old inoculum the laccase activity increased to 18.05 U/g of substrate on 10 day of SSF. This activity is 25.8% more compared to the maximum activity of 14.35 U/g of substrate obtained with 2-week-old inoculum on 15 day of SSF.

On the basis of these results, enzyme productivity by *Pycnoporus sanguineus* and possible utilization strategies of 'hampas' were proposed and discussed.