

## ABSTRACT

Present study deals with the improvement of *Trichoderma viride* strain for the enhanced production of  $\beta$ -glucosidase in shake flask. The wild strain GCBT-112 was treated with UV radiations and MNNG separately and alternately. Four hyper producers were selected (UV<sub>6</sub>, UVNG<sub>4</sub>, NG<sub>9</sub>, and NGUV<sub>7</sub>) and compared in terms of  $\beta$ -glucosidase production. *Trichoderma viride* strain UVNG<sub>4</sub> was found to be the best producer. This mutant strain gave maximum extra cellular protein and  $\beta$ -glucosidase production (0.21 mg/mL and 19.92 U/mL/min, respectively) when cultured on the medium containing KH<sub>2</sub>PO<sub>4</sub> 2.0 g/L, MgSO<sub>4</sub>.7H<sub>2</sub>O 0.3 g/L, ZnSO<sub>4</sub>.7H<sub>2</sub>O 0.0014 g/L, FeSO<sub>4</sub>.7H<sub>2</sub>O 0.005 g/L, MnSO<sub>4</sub> 0.0016 g/L, CoCl<sub>2</sub> 0.002 g/L, CaCl<sub>2</sub> 0.002 g/L, Tween-80 2.0 mL/L supplemented with 1.0 % wheat bran at initial pH 5.5 after 72 h of conidial inoculation ( $5.52 \times 10^7$  conidia per 25 mL of the fermentation medium). Both organic and inorganic nitrogen sources were tested for  $\beta$ -glucosidase production and soybean meal was the best organic nitrogen source as compared to all other nitrogen sources. After the optimisations, *Trichoderma viride* UVNG<sub>4</sub> gave about 12-fold higher  $\beta$ -glucosidase production than the wild strain.