## Abstract

Certain factors affecting glucose oxidase production were studied. The objective was to increase glucose oxidase (GOD) production by selecting appropriate strain of *Aspergillus niger* and optimization of growth conditions. The best glucose oxidase producing strain of *Aspergillus niger* W47 was selected and subjected to optimization of glucose oxidase fermentation. The results revealed that highest activity of GOD ((14.5 ± 0.51 U/g cell mass with specific activity 4.26 ± 0.06 U/mg proteins) was obtained on medium M-VIII containing 8.0% glucose, 0.0388% $(NH_4)_2HPO_4$, 0.3% peptone, 0.0156% $MgSO_4$. 7H2O, 0.0188% $KH_2PO_4$ and 3.5 % $CaCO_3$. Modifications of carbon source, nitrogen source and phosphorous source in the medium M-VIII were made and it was shown that maximum yield of GOD was obtained in the presence of glucose as carbon source (14.34 ± 0.533 U/g cell mass and 3.68 ± 0.122 U/mg proteins), urea and $(NH_4)_2HPO_4$ as nitrogen sources (22.595 ± 0.345 U/g cell mass with specific activity 5.90 U/mg proteins and 21.69 ± 0.411 U/g with specific activity 5.99 U/mg proteins, respectively) and $KH_2PO_4$ as phosphorous source (20.18 ± 0.295 U/g cell mass with specific activity 4.87 ± 0.236 U/mg proteins). Effect of different concentration of calcium carbonate was also studied and found that highest yield of GOD (24.55 ± 0.190 U/g with specific activity 7.69 ± 0.404 U/mg proteins) was obtained at 3.5% of calcium carbonate. Without calcium carbonate activity was very low. Effect of different concentration of glucose, urea and $(NH_4)_2HPO_4$ were investigated and it was revealed that optimal production of GOD was obtained at 12% glucose, 0.06% urea and 0.1% $(NH_4)_2HPO_4$. Optimum GOD enzyme activities were attained at pH 6.0 and 27.5°C temperature after 72 hr fermentation time.