ABSTRACT

The present work is concerned with isolation, screening and characterization of *Aspergillus niger* for the production of glucose oxidase. In this context, one hundred and fifty fungal strains were isolated from soil samples collected from different localities of Lahore city. All these isolates were screened to select the best glucose oxidase (GOD) producer in 250ml shake flask. Among all the strains W-47 gave reproducible results. Both morphological and molecular techniques were used to characterize and identify the isolate W-47. The color of colonies developed by W-47 on malt extract medium was black with average size was 21-23 mm (dia), conidiophores 949-1060 µm long, phialides 14-16 µm long and conidia 3.3-5.2 µm in dia. On the basis of these morphological characters this isolate was identified as *Aspergillus niger*. This isolates was further subjected to 18S rDNA analysis to confirm the identification. For this purpose DNA was isolated and PCR product of 1.8kb was obtained by using universal primers. After the sequencing of the amplified fragment 648 bp sequence was obtained. The isolate W-47 showed 98% homology with *Aspergillus niger* when BLAST was run. The dandrogram was constructed from the results of multiple sequence alignment of 19 different *A. niger* strains obtained from NCBI data bank. Phylogenetic tree determined that the isolate W-47 was closely related to the *A. niger* strains TR-H and ETYB-13. The isolate was designated as *Aspergillus niger* W-47. Eighteen different media were tested to analyze the ability of the *A. niger* W-47 for the production of glucose oxidase. However, maximum production was obtained when M-VIII medium containing (%, w/v) Glucose 8, peptone 0.3, $(NH_4)_2HPO_4$ 0.04, KH_2PO_4 0.0188, $MgSO_4.7H_2O$ 0.0156, $CaCO_3$ 3.5 (pH 6) was used. The optimum time period for the biosynthesis by *A. niger* W-47 was found to be 72 h.