ABSTRACT

In this study, a total of 93 soil samples were collected from tanneries, textile mills, paper mills, drains and compost sites and used for the isolation of thirty nine laccase producing bacterial isolates on nutrient agar screening medium. In primary screening, five bacterial isolates producing maximum reddish-brown zone of oxidation were selected for secondary screening. The secondary screening was done on the basis of maximum production of laccase by submerged fermentation. After secondary screening, bacterial strain L-39 having maximum laccase production was selected for further identification and optimization studies. Molecular identification of strain L-39 was carried out by 16SrRNA sequencing and the bacterial isolate was identified as the *Bacillus licheniformis*. Optimization of various parameters such as media, incubation time, temperature, pH, carbon sources, nitrogen sources and inoculum size was carried out to boost laccase production. Maximum laccase production was obtained using LM-III medium after 96 hours of incubation time, at 37°C temperature, pH 7.5 with 1.0 percent glucose as carbon source and 1.0 percent yeast extract as nitrogen source when it was inoculated with 4% inoculum of *B. licheniformis*. The optimization resulted in 22.5 fold enhancement in laccase production.