



Abstract

The current study discussed the production and optimization of extracellular lipases from locally isolated fungal strains by optimizing various parameters keeping in view the economic constraints. Thirty two soil samples were collected from automobile workshops of Lahore and Nankana Sahib. Fifty lipolytic fungal strains were primarily screened onto Mineral salt agar medium; among them the strain that yielded maximal lipase units (3.11 ± 0.12 U/mL/min) was selected and coded as IIB 15; which was microscopically confirmed as strain of genus *Aspergillus*. To optimize culture conditions, various growth parameters were evaluated and lipase activity was determined quantitatively. The optimal production of lipase was reported at an incubation period of 72h, at pH 6.0 and a temperature of 30°C when Mineral salt broth medium was used as fermentation medium while Olive oil, glucose (2%) and peptone (1.5%) were analyzed as the best substrate, carbon and nitrogen sources respectively for lipase production and the lipase activity was reached upto 6.9 ± 0.115 U/mL/min. The crude enzyme was partially purified by ammonium sulphate precipitation (40—80%); the optimal lipase units 5.18 ± 0.05 U/ml/min were achieved at 60% ammonium sulphate saturation. The molecular weight of lipase was determined to be 40 kDa. The fermentation broth (supernatant) was directly used for the production of efficient and cost-effective biodiesel to meet the raising demands of increasing population.