ABSTRACT

The present study describes the isolation, identification and screening of bacterial strains for lipase production. The strains were initially selected qualitatively on Tributyrin agar plate. The most potent strains NL-37, NL-39 and NL-40 producing 26.30 ± 0.20, 25.10 ± 0.20 and 24.4 ± 0.40 of lipase respectively were selected. The strains were then identified on the basis of standard morphological, biochemical test and by 16S rDNA amplification and sequencing, assigned the code NL (Nutrition Lab) NL-37 for *Bacillus cereus*, NL-39 for *Bacillus subtilis* and NL-40 for *Bacillus amyloliqueficians*. Various waste oils, fruit peels and agro industrial wastes were examined for lipase production. In the presence of 5% bagasse with 5% mustard oil cake the maximum lipolytic activity was 40.50, 16.23 and 33.33 U/ml for NL-37, NL-39 and NL-40 respectively were observed. NL-37 Showed maximum lipase activity at temperature 40°C, pH 8 with 5% inoculum after 72 hours. NL-39 showed maximum lipase production at 45°C of temperature, at pH 7 with 5% inoculum. Whereas optimum conditions for lipase production by NL-40 were at 40°C temperature, pH 7 with 4% inoculums. All the present strain showed maximum production of lipase when media is supplement with yeast extract and sucrose. Ca^{+2} showed stimulatory however Ag^{+2} and SDS expressed inhibitory effect on the production of extracellular lipases by *Bacillus* Spp. The effect of pH, temperature, detergent and metal ions showed stability of Lipases at wide range. The enzyme was subjected to purification by ammonium sulphate precipitation for salting out proteins. Desalted enzyme was subjected to DEAE – Cellulose column for ion-exchange, chromatography. Lipase from NL-37 showed 56 kDa whereas NL-39 and NL-40 showed 41 kDa and 45 kDa of molecular weight on SDS-PAGE. Biodetergent and bioremediatory properties of lipase were showed it can be used for commercial uses.