ABSTRACT

The soil samples were collected from different habitats or locality like hilly areas, irrigated land, agricultural land, garden soil and industrial area. The 22 soil samples were collected which have different bacterial morphology like *coccobacilli, bacilli, cocci* dominant *bacilli* and mix growth. Total eight ADI producing bacterial cultures were isolated which showed ADI potential. These isolates were coded and showed maximum zone of clearance in nutrient agar plates and hence was selected for the study of ADI production and enzyme activity. *Bacillus subtilis* culture was identified by comparing with the master culture provided by IIB department GC Universaty Lahore. An extracellular arginine deiminase (ADI) was produced from ISL-9 and ISL-19 through different methods and optimization of conditions. The production of the enzyme from ISL-9 showed maximum activity, when the production was carried out with 25 ml medium volume followed by 48 h of incubation, at pH7 and . After optimizing the conditions, the enzyme was produced from ISL-9 showed more activity as compared to ISL-19. The maximum enzyme activity of 6.25±0.31 mU/ml/min (ISL-9) and 4.08±0.20 mU/ml/min (ISL-19) was observed at pH 7, 37°C incubation temperature, 20 min incubation period for ISL-9 and 40 min of incubation for ISL-19. The partially purified ADI treated with PEG-20 resulted in 3 fold purification in case of ISL-9 while 3.5 fold purification for ISL-19. The residual glucose concentration of both isolates showed maximum activity at 12 h of incubation while growth and biomass of both isolates showed maximum activity at 96 h of incubation. It was further concluded that the production of enzyme from ISL-9 exhibited more enzymatic activity as compared to ISL-19. The ADI enzyme was used for the treatment of cancer.