# ABSTRACT

The research was conducted for the production of protease from newly isolated bacterial strain $T_5$, $T_3$, $H_3$. The strains were isolated from soil collected from different areas of Lahore, Pakistan. Enzyme production was optimized using submerged fermentation technique for different ranges of pH, for different concentrations of different carbon and nitrogen sources. Fermentation media was incubated for 48hrs. at 37°C temperature with agitation speed of 200 rpm. Protease production (10.7U/ml/min) from bacterial strain $T_5$ was optimized at 2.0% soybean meal, 1.0% glucose and 8 pH. Protease production (6.4U/ml/min) from bacterial strain $T_3$ was optimized at 2.0% soybean meal, 1.5% glucose and 8 pH. Protease production (12.6U/ml/min) from bacterial strain $H_3$ was optimized at 2.5% wheat flour, 1.5% fructose and 7.5 pH. Proteases were partially purified with 70% ammonium sulphate. Proteases were immobilized on different supports and their activity was checked. When partially purified protease were immobilized on Amberlite (XAD 761) then increase of protease production were 371.42% (52U/ml/g support) for strain $T_5$, 208.33% (25U/ml/g support) for strain $T_3$ and 342.24% (64U/ml/g support) for strain $H_3$. When partially purified protease were immobilized on Duolite (A568), then increase of protease production were 314.28% (44U/ml/g support) for strain $T_5$, 225% (27U/ml/g support) for strain $T_3$ and 395.72% (74U/ml/g support) for strain $H_3$. When partially purified protease were immobilized on Lewatit (VPOC 1600), then increase of protease production were 450% (63U/ml/g support) for strain $T_5$, 541.66% (65U/ml/g support) for strain $T_3$ and 320.85% (60U/ml/g support) for strain $H_3$.When partially purified protease were immobilized on Pentynyl Dextran(NT4L360), then increase of protease production were 271.42% (38U/ml/g support) for strain $T_5$, 3483.33% (418U/ml/g support) for strain $T_3$ and 304.81% (57U/ml/g support) for strain $H_3$ Immobilized protease from bacterial strain $T_3$ with highest immobilizing activity 3483.33% (418U/ml/g support), was selected for synthesis of oligopeptide.