## ABSTRACT

Urease is an important enzyme that hydrolyses urea and produces carbon dioxide and ammonia. The aim of the study was to produce, purify and characterize urease produced from locally isolated *Bacillus* species. Urease from *Bacillus cereus* was produced by submerged fermentation. Ten different media were utilized for urease production. The effect of various carbon sources (lactose, glucose, sucrose, fructose, maltose and xylose) and nitrogen sources (peptone, yeast extract, ammonium phosphate, potassium nitrate, ammonium nitrate, ammonium acetate and tryptone) was investigated on urease production. The effect of temperature and fermentation period on urease production was investigated. Urease was purified by precipitation by ammonium sulphate succeeded by ion exchange chromatography and SDS-PAGE analysis. The kinetic parameters of the enzyme including $V_{max}$ and $K_m$ were calculated by Michelson- Menton equation. Urease was immobilized in sodium alginate beads. Different parameters of enzyme were studied including effect of temperature (20 to 65°C) on urease activity, effect of pH (5-9) on urease activity, thermal stability of urease, effect of 1mM of various metal ions ($K^+$, $Co^{2+}$, $Fe^{2+}$, $Ca^{2+}$, $Mg^{2+}$), effect of various surfactants (Triton-X-100, Tween-80, EDTA and SDS), storage stability at 25°C and reusability of immobilized urease. The findings contribute to our understanding of urease enzyme and their potential applications in diverse fields.