The amine oxidases are the group of oxido-reductases which deaminates the polyamines. The enzymes have been reported from many plants, animals and microorganisms. The amine oxidases have been suggested to be involved in many physiological and biochemical processes in plants e.g. seed germination, seedling growth, flowering, fruit set and development, cell division and enlargement, synthesis of various other metabolites (e.g. indole acetic acid, alkaloids etc). growth and development. The enzymes also play a vital role during stressed conditions. The polyamines have been reported to accumulate in plants under heavy metal contamination, salinity stress, mineral deficiency heat and cold shocks etc. and same has been reported for animals. In human beings also, the polyamines have been reported to accumulate during stressed conditions like leukemia and other types of cancers endometrial adenocarcinoma, uterine myosarcoma and granulosa cell carcinoma. During pregnancy in women the polyamines have been shown to accumulate in many thousand folds. Being substrate inducible, the amine oxidases have also been found to accumulate under various stressed conditions in plants and animals.

Not much work has been done on the amine oxidases since their discovery in plants by Werle and Raub (1948). In plants the role and...
regulation of amine oxidases is yet obscure. A few reports exists regarding their regulation under the stressed environment, particularly under heavy metal contamination and saline conditions. The stresses exists in nature, in combinations with each other and such a study of the combined stresses on amine oxidases does not exists. Although, PAs levels allivate during various stress, but the enzyme is found to decrease during the same conditions which seems to be contradictory to its inducible character.

The Cu\(^{2+}\) diamine oxidase activity is reported in this thesis from five important cultivars of mungbean which is active during germination and early seedling growth. It appears that this enzyme has a significant role in mobilization of amine in seed germination of *Vigna radiata*. The enzyme is inhibited by the exogenously supplied Cd\(^{2+}\) and Pb\(^{2+}\) salts which corresponds to polyamine's accumulation in the seedlings. Proteins of Mr 10-90 kDa are synthesized in the presence of the metals. The effect of heavy metals on the enzyme is more profound in the presence of salt stress caused by NaCl and CaCl\(_2\). A 39 fold purification of the enzyme is achieved using ammonium sulphate precipitation, heat shock and by adsorption of the enzyme on hydroxlapitite column. The enzyme is characterized for its various parameters which show a resemblance with other legumes Cu\(^{2+}\) - amine oxidases. The purified enzyme is immobilized on Zirconia-coated glass beads and the immobilized enzyme maintained most of the properties of the native enzyme, though some properties show slight modifications. The immobilization of Cu\(^{2+}\) - amine oxidase is done with an intention to develop a simple enzymatic and reusable method for estimation of diamines in plants or animal samples. The various internal and external factors which regulate the expression of various isoforms
of this enzyme and its role in the regulation of endogenous polyamine level needs an extensive study. The enzyme appears to be heat stable which is a significant property to enable a multifacial use of the enzyme. The physiological significance of this property in plants is however, yet to be elucidated.