SUMMARY

Modern agricultural practices depleted soil fertility due to excessive and indiscriminate application of chemical fertilizers for quite long period towards getting higher yields. Under these circumstances it is inevitable to educate, demonstrate and encourage farmers to use organic types of manure like vermicompost, farm yard manure and liquid biofertilizers.

Hence, biological approaches have been attempted to isolate thermophilic fungi from fruits and vegetable waste compost and the beneficial effect of *Malbranchea cinnamomea* and its response on Lettuce, Oregano and Thyme were studied. *Malbranchea cinnamomea* required a minimal medium for its growth. Further more its artifact of the nutritional environment varied. Molasses medium proved to be the best.

Enzymes of thermophilic fungi *Malbranchea cinnamomea* have been studied primarily to explore their suitability in bioprocesses. Since the culture filtrate of *Malbranchea cinnamomea* can be obtained in substantial quantities the enzymes that are selected in all growth media have been studied.

The vegetative growth parameters of the test plants showed increased trend with the inoculation of metabolites of *Malbranchea cinnamomea*. It was owing to possible positive interaction of metabolites augmented the higher productivity resulted in significant increase in mineral elements. The increase in uptake of mineral nutrients in different plant parts ultimately resulted in higher uptake in harvest stage.
*Malbranchea cinnamomea* is one of the potent natural pigment producing fungi. The application of this fungal pigment in dyeing of silk may be recommended. However, the application of this pigment for silk fabrics has not been determined.

Biosynthesis of nanomaterials from *Malbranchea cinnamomea* offers a valuable contribution into material chemistry. Hence, it is an ideal candidate as an environmental friendly synthesis of silver nanoparticles.

Biotechnological approach towards the synthesis of nanoparticles has many advantages such as economic viability, possibility of easily covering large surface area by suitable growth of mycelia, and its green chemistry nature cost effective and environmental friendly for soil and agricultural crops.

The significance of this work should be directly applicable in biosurfactant pharmaceutical and also cottage industries with potential future economic benefits.