Conclusion
• It was documented that *T. rubrum* was the major etiological agent isolated from the dermatophytoses patients in and around Chennai. *T. rubrum* formed the major causative organism for chronic lesions (with more than 1 year of infection history).

• It was also noted that dermatophytoses were common among males than females in the study area.

• A significant difference was observed in the activity of protease and keratinase enzyme among the species belonging different ecological groups.

• Geophilic (*M. gypseum*) and zoophilic (*M. canis*) dermatophytes recorded statistically significant higher activity when compared to their anthropophilic (*T. rubrum* and *E. floccosum*) counterparts. This supports the fact that human infection by geophilic and zoophilic dermatophytes are more severe and extensive in nature than infections caused by anthropophilic group.

• In general human hair was the most preferred substrate for *T. rubrum, M. gypseum* and *M. canis* while *E. floccosum* showed preference towards human nail *in-vitro* with higher protease and keratinase activity.
• Though the keratinase activity of the species viz. *T. rubrum*, *E. floccosum*, *M. gypseum* and *M. canis* taken for the present study were different on different native substrates (human hair, human nail and chicken feather), the molecular weight of the partially purified active fragments with keratinolytic activity of all the test organisms were close to each other (36.21 kDa, 33.19 kDa, 33.26 kDa and 31.41 kDa).

• Poly Acrylamide Gel Electrophoresis results of the keratin digestion profile showed almost similar banding pattern. But the intensity of the bands (quantity of the proteins/ enzymes?) was different, which indirectly confirmed that the activity of keratinase and digestion of keratin varied among the different test organisms.

• The dendrogram showed that the banding pattern of *M. gypseum* and *M. canis* were similar and the banding pattern of *T. rubrum* and *E. floccosum* were also similar. It was also confirmed that *M. gypseum* and *M. canis* produced more bands than *T. rubrum* and *E. floccosum*. The organism with higher keratinase activity (such as *M. gypseum* and *M. canis*) produced more number of fragments (bands) with higher intensity than the organisms with lower keratinase activity (such as *T. rubrum* and *E. floccosum*).
• Light and Electron Microscopy study showed the presence of perforating organs in *M. gypseum* and *M. canis* strains and such organs were absent in *E. floccosum* and *T. rubrum*.

• All the species of dermatophytes digested keratinaceous substrates such as hair, nail and chicken feather by producing proteases and keratinase, but the activity of these enzymes varied among the different ecological groups. A moderate enzyme activity was recorded in *T. rubrum* and *E. floccosum*. This was a survival advantage for its obligate parasitism and had enabled anthropophisation of the species in the course of evolution of dermatophytes.