CONCLUSION

Theoretically, the development of human and animal syndromes involving Dermatophytes is the slow evolution of pathogenicity of the dermatophytes (Originally soil fungi) that, together with their corresponding hosts, co-evolved to develop a number of specific clinical syndromes. Among the dermatophytes *T. rubrum* appears to have developed into a near perfect human parasite. As such this interesting fungus, never really molest the host except for those special moments condition are favorable; moments when the fungus takes hold in the spaces between toes, on the groin, axilla, under the breasts, and on the buttocks. Only at these occasions is the infection noticeable and symptomatic.

*T. rubrum* is now, a cosmopolitan anthropophilic dermatophyte and approximately recorded in 70-89 % cases. Studies on factors influencing the virulence of this dermatophyte has focused on the production of extracellular protease. This enzyme cleaves available proteins into metabolically usable carbon, nitrogen and sulfur and subsequently makes most adverse environment of the skin habitable and proliferable for the organism.

It has been established that the pathogenesis is the simultaneous effect of physiological and biochemical characteristics which are transmitted in coded form in the molecular levels of the organism from generation to generation. There is no doubt that the congenial environment and suitable nutrient supply to these heterotrophic organism play a pivotal role in the entire phenomenon. A wealth of literature are presently available on the morphological characteristics, nutritional parameters, physiological processes, genetic patterns etc of the organism. Yet a maiden attempt has been made in the present study, in the nutritional pattern and proteolytic enzyme extrusion of the organism so that mysteries of its sporadic appearance and cosmopolitan nature can be solved. The systematic probe on the effect of nutrients supply help develop feasible measures to restrict the spread of the pathogen.

On the preliminary screening, it was identified that the strains of *T. rubrum* only causes dermatophytic lesion at Rourkela, an industrially important town in the state of Orissa, India. The isolation of a new strain of *T. rubrum* is unique here which also showed distinct deviation in proteolytic enzyme production.
The maximum growth and the enzyme production of the strains of the organism were detected to be at a temperature, which is slightly less than the body temperature. In the pioneering work here the incubation pH, substrate and oxygen supply for good growth and proteolytic enzyme production of the organism was evaluated.

Notwithstanding the variations in the morphological and colony characteristics, the strains showed great parity in substrate specificity and homogenous peaks of the purified enzyme. Abhorrence to certain nitrogen and carbon sources and special preference to monosaccharides, certain amino acids was not reflected in the similar increase in the proteolytic enzyme production. Rather the occurrence of certain such substrates above a desired amount inhibited altogether the enzyme production.

In the unique observation here, it was again detected that the established synthetic antimycotic drugs which are used therapeutically against dermatophytic infections caused by *T. rubrum* could not inhibit the proteolytic enzyme production. This may be attributed as one biochemical reason for incurable nature of such diseases. However certain locally available and used plant extracts had not only retarding effect on the growth of the pathogen but also inactivated the proteolytic enzyme production.

The occurrence of dermatophytic diseases to man is very old. It has survived, evolved and ramified all over the world preserving its pathogenic implications. This study is a pragmatic approach to isolate, identify such incitant or causal complex, to provide the most suitable environment, nourishing media and inactivating drugs so as to evaluate its growth and proteolytic enzyme. There were distinct similarity of the strains on the biochemical basis.

The studies initiated here have wide ranging impact on probing biochemical basis of pathogenic nature of organism and its evolution to become an anthropophilic pathogen. It will gain definite substance since the complete eradication of fungal diseases can be very rarely feasible. Hence determining multifaceted and biochemical basis for management of this fungal menace can be of great use to the mankind.

Another positive implication of the present line of research is the optimization in the production of the enzyme, protease. This enzyme occupy a
pivotal position with respect to their physiological roles as well as their commercial applications. Microbes are an attractive source of protease owing to the limited space required for their cultivation and their ready susceptibility to genetic manipulation. Despite the extensive research on several aspect of protease, there is a paucity of knowledge about the roles that govern the diverse properties of the enzyme (Rao et al, 1998). Deciphering these secrets would enable us to exploit protease for their application in biotechnology. Thus, the present line of research may be a beginning of realization of the distant dream.