CONCLUSIONS

In this study an anticandidal protein, ACP-N84 from the fungal strain *Aspergillus giganteus* MTCC 8408 was purified AND characterized to near homogeneity. This is the first report showing that a promising ACP-N84, average 24.3 kDa purified protein molecule has strong antifungal potential against *Candida albicans* NCIM 3417 that might be used to treat candidiasis especially in immunocompromised patients. Analysis of N-terminal amino acid sequences and peptide mass fingerprinting of Acp-N84 suggested the protein the first 12 amino acid residues of the N-terminal were LRHDPKTIEELT, to be putative GTP-binding protein from *Aspergillus* species, with a significant score of up to 92. Such preparations may be important leads for developing new antifungal therapies. We also showed that secreted protein Acp-N84 is in the growing list of secreted biochemical that directly inhibit HeLa cells growth as well as tumor activity determined by fluorescence staining with Hoechst 33342 and propidium iodide dye. These proteins, considered to be only putative, can now be assigned defensive functions and studied experimentally. Sequence alignments of Acp-N84 and its homologues also indicate the conserved motifs of sequence identity that may represent a general mechanism for antimicrobial activity, through the formation of pores in cell membranes.

We demonstrated the Logistic model was the best model in fitting the metabolically associated cell biomass (macroscopic). Productivity have been improved by controlling both physical parameter (pH and inoculums volume) and environmental conditions (temperature and slant age), in media contained soluble starch supplemented with CSL and proteose peptone.

Therefore; indicates a better revelation of the bioprocess strategies for improving the fungal metabolite Acp-N84 productivity and may promote economical design at the industrial level for future scale up.

The K^+/Ca^{2+} Ratio played a major role in endogenous cell differentiation and enhanced afp production. The effect of lower levels of Mg^{2+} was greater on μ indicates moderate shortages of magnesium would tend to affect the onset of fermentation rather than the eventual degree of attenuation. Combinatorial approach of one factor at a time (OFAT) and Taguchi L_{27} orthogonal array methods with qualitative investigation of cell morphology (SEM analysis) helped in reaching optimal solution and critically analyzing the interactive effects of most decisive parameters on anticandidal protein production by *Aspergillus giganteus* MTCC 8408 in submerged fermentation.

The implementation of Acp-N84 research into future invasive anti-candidiasis improvements will require a careful study of feasibility experiments and a great amount of tedious job. Several experiments regarding Acp-N84 activity, functional mechanism, range of organism impact, evolutionary diversification are still yet to be explored.

Despite these unknowns, we believe there is great potential for utilization of protein Acp-N84 isolated under submerged fermentation of *Aspergillus giganteus* MTCC 8408 in the control of disease.

Further study is definitely needed so that protein Acp-N84 could be utilized as an environmentally-safe fungicide and additionally, genetic engineering of *Aspergillus giganteus* MTCC 8408 could generate strain with enhanced expression to curb major production cost and technical hurdle in the purification of the product.