Summary and Conclusion
6. SUMMARY AND CONCLUSION

The present investigation, Mycopathology and mycotoxicology of freshwater finfishes in Thanjavur and Thiruvarur districts of Tamil Nadu, India was carried out from January 2000 to June 2002 in order to addressed the health related issues of freshwater fin fishes. The results of the investigation are summarized below.

**Mycopathology**

Freshwater ponds in Thanjavur and Thiruvarur showed physico-chemical characters of water as conducive for the growth of fishes, but spelled variations in different seasons. Significant variations were observed in the total fungal population of water according to the changes in physio-chemical condition. Notably surface water temperature and pH were found to influence the increase of fungal population.

The mycotic diseases survey revealed various fungal associated clinical signs in fishes. The disease prevalence was observed from October to December months (premonsoon and monsoon seasons). In the total number of 5267 specimen examined 1100 specimens were infected during the entire period of the study. Among the diseased population *Channa striatus* was highly infected (29%) than the other species. The various lesions observed in the present investigation revealed the invasion of fungal population, with the higher incidence in gill followed by intestine, body lesion and kidney in the order. In all,15 species belonging to 10 genera were recorded from mycotic lesions. Of them, *A. flavus* was the dominant species. Pathogenicity confirmative test conducted on *C. striatus*, by making wounds artificially and inoculating the fungi (*A. niger*, *A. terreus* and *F. oxysporum*) in water column. These tests reflected the clinical symptoms on fish and death was noticed at various durations, specific to each fish. Haematological, investigation revealed significant variation in cell shape, cell counts, haemoglobin content, and biochemical constituents as a refection of stress due to the disease. Tissue biochemistry also exhibited variations at low levels, in liver, kidney, gill, intestine and muscle. These changes in the diseased fishes could be ascribed due to the utilization of reserves as a consequence of induced stress. Histological changes also were spelled out in diseased fishes.
Mycotoxicology

Mycotoxicological investigation revealed various levels of aflatoxin B₁ in the feed materials used in fresh water aquaculture. Among the 8 different feed samples collected and examined, groundnut cake contained higher amount of aflatoxin. Fungal population study on feed material revealed the diversity and density of fungi, which were more in the feeds with considerable level of aflatoxin. In all the 10 species belonging to 3 genera of Deuteromycetous fungi recorded, percentage of *A. flavus* was higher than other species. Aflatoxin B₁ was prepared by culturing *A. flavus*, supplemented with feed and orally administered to the fish *C. mrigala*. The LD₅₀ value for aflatoxin was determined as 0.52 mg/kg. The haematological tissue biochemical and histopathological signs for aflatoxicosis were established. The toxin affected the function of the vital organs, and there by the metabolic pathways. This altered the haematology, biochemistry and histology of the fishes.

It was revealed that the aflatoxin B₁ could cause changes in these parameters even at low concentration (50 ppm) though the mortality is expected at 0.52 mg/kg. Slowly this will get entry into the food web and may cause damages to human systems.

Hence, it is necessary to take suitable measures for the hygienic storage of aqua-farm feeds and awareness to the fish farms. Otherwise, mycotoxicosis could become a serious public health hazard.