

PREFACE

The Animal Physiology Laboratory of Shivaji University, Kolhapur, Maharashtra (India) is engaged in extensive programme on bioassay-guided phyto-chemical studies on the indigenous plants of Western Ghat region, directed towards the piscicidal properties. These studies include characterization of toxins of indigenous plant species and testing of crude powder and purified active principles for the determination of the toxic effects on the different vertebrates, particularly fishes in the fresh and marine water habitats, both under laboratory condition and under natural environment, suggesting a suitable dose of the plant toxins for undesirable fish species which particularly creates problems in the pisciculture. These studies also include the effect of plant toxins on the different organ-systems of vital importance of different vertebrates. The work embodied in the present thesis forms a part of such research project and concerns with studies on the phyto toxin from indigenous plant, Acacia concinna, Decaisne, of family-leguminosae locally known as 'Shikekal', and its effects on the vital organs like buccal mass, gill, liver, kidney and intestine of the fish Tilapia mossambica. The present investigation was also incited by the increasing use of different indigenous plant species for killing the fish by the natives in this part of the country. Selectivity of killing the fishes among all other aquatic fauna, by the natives was one of the stimulating factors in undertaking this type of study in this laboratory.

The thesis is divided into five chapters. The first chapter assimilates literature on the indigenous plants with piscicidal characters, their actions on the vital organs of the fish (buccal mass, gills, liver, kidney and intestine) and for the comparison the literature on the heavy metals and inorganic and organic chemical intoxication. It also describes the reasons that led us to take up the present problem and outlines of the present work. Second chapter describes the material and methods adopted in the present study followed by the observations in ~~the~~ chapter ^{four} third. The observations are discussed in the fourth chapter in the light of normal physiology and altered physiology of the fish T. mossambica and certain conclusions and general summary of the thesis have been included in the ~~chapter~~ fifth.

I assume responsibility for the opinion expressed in the present thesis and also for omissions and errors if any, in the body of the thesis. I feel and hope that many of the readers, both from India and abroad, will find the present thesis interesting, informative and stimulatory.