

PREFACE

The Malacology Laboratory in the Zoology Department of Shivaji University, Kolhapur, Maharashtra (India) is engaged in extensive work on the reproductive neuroendocrinology of the phylum Mollusca. The main guide line of such work concerns with the identification of hormone and neurohormone producing organs, detection of neurosecretory cells in the cerebral, visceral and other ganglia and in the optic tentacles, characterization and detection of the nature of neurosecretory products in these cells and find out the changes in these organs in various phases of the process of reproduction and to relate such changes in the neuroendocrine organs to the biochemical and enzymatic changes in the reproductive organs like ovotestis albumin gland, dart gland, spermatheca, penial complex, vas deference, oviduct, etc. in the physiology of reproduction in these animals. Especially the hormone-enzyme relationship has been extensively worked out in some vertebrates. The work on reproductive endocrinology of the phylum Mollusca is very poor.

The work embodied in the present dissertation forms a part of such research project and concerns with the identification of neuro-hormone elaborating Dorsal body, localization of neurosecretory cells in the cerebral ganglia and optic tentacles, characterization of neurosecretory granules and alterations in them during breeding and aestivation periods and to relate these changes to the active and inactive gametogenetic activity in the ovotestis of two locally available stylommatophoran terrestrial gastropods- a slug, Semperula

maculata and a snail, Cryptozona semirugata in the annual seasonal breeding-aestivation cycle. Both the histological and special histochemical techniques have been employed, the former giving a reliable information on the morphological and histological alterations in the neurosecretory in the cerebral ganglia, optic tentacles and in the different cellular elements of the ovotestis in exact mathematical terms and the latter cellular sites and changes in the biochemical constituents of neurosecretory cells and ovotesticular cellular elements. Such an integration of histological and histochemical techniques is found to give a better understanding to the role of neurosecretion in the physiology of reproduction in the gastropod Molluscs.

The results of the dissertation have been presented in five chapters and they have been critically discussed in the light of existing information. At the end, the dissertation gives the summary and certain ideas which have been arrived at and the conclusions are put forward. The last chapter is followed by the bibliography.

I assume responsibility for the opinions expressed in the present dissertation and also for omissions and errors, if any, in the body of the dissertation. I feel and hope that many of the readers of my published work, who have expressed satisfaction and admiration for my work, will find the present dissertation interesting, informative and stimulatory.