CHAPTER-V

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1 With a view to find out the role of neurosecretion in the gametogenesis in the ovotestis of two locally available stylommatophoran gastropods both from the terrestrial habitat-one slug, Semperula maculata and another snail, Cryptozona semirugata, the present neuroendocrinological study was undertaken.

2 In the present investigation it was proposed to carry out detailed-

i) Analysis of neurosecretory cell types in the cerebral ganglia of both the species and the presence of dorsal bodies in the species under investigation.

ii) Analysis of localization of neurosecretory cells in the cerebral ganglia of these species.

iii) Analysis of chemical nature of neurosecretory granules in the neurosecretory cells of cerebral ganglia.

iv) Analysis of alterations in the size, number and neurosecretory granules of neurosecretory cells during breeding and aestivation periods.

v) Analysis of alterations in the neurosecretory cells and in the optic tentacles of both the species in relation to gametogenesis in the ovotestis.

3 The present study was performed by employing recent and well established standard histological and special histochemical staining procedures.

4 The results of the present investigation indicated that-

i) There is no distinct Dorsal body in the terrestrial slug, S. maculata. It's Dorsal body showed some scattered neurosecretory cells in the connective tissue surrounding the cerebral ganglia. But the terrestrial snail, C. semirugata contained very distinct Dorsal body in a connective tissue sheath and it is located in the above area of cerebral commissure.

ii) The presence or absence of Dorsal body is independant of the systematic position and habitat of the concerned gastropod species.

iii) In S. maculata and C. semirugata the neurosectetory cells were located in the four distinct regions i.e. Dorsomedian, Dorsolateral, Ventromedian and Ventrolateral regions of the cerebral ganglia.

iv) The number of neurosecretory cells in the cerebral ganglia was eight in S.maculata and seven in C. semirugata.

v) The neurosecretory material in the neurosecretory cells of cerebral ganglia contained glycogen along with other secretory products in both the gastropod species under investigation.

vi) The size , the number and the concentration of neurosecretory granules showed variations in the breeding and aestivation periods in the seasonal breeding-aestivation cycles of these gastropods. Their concentration was maximum during the breeding season whereas it was at the lowest level in the aestivation.

vii) When the concentration of neurosecretory products was maximum the number of matured ova and sperms were also maximum in the ovotestis of these gastropods, indicating the role of neurosecretion in the gametogenesis of these species.

viii) There were parallel but similar changes in the neurosecretory cells in the optic tentacles of these gastropods. Their size, number, staining reactiv ties and the concentration of neurosecretory granules were maximum during gamotogenesis when the neurosecretory activity was maximum in the cerebral ganglia of these gastropods indicating some connection between the neurosecretion in the cerebral ganglia and optic tentacles with the gametogenesis in the ovotestis of the gastropod species under study.

These obsrvations have been critically discussed in the light of existing information.

5 A glimpse of the role of neurosectetory activity in different physiological processes begins to be caught, but the functional role of the neurosecretion has been made clear in only very few instances. Their role in other reproductive

processes except gametogenesis of molluscan physiology of reproduction still remains unknown.

The present study provides a guideline for future biochemical and histochemical work on the neurosecretion and its role in reproduction in gastropod molluscs.