

Impact of heavy metal mercury on the ovary of adult female *Odontopus varicornis* (Dist.) (Hemiptera : Pyrrhocoridae)

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The female reproductive system of the adult female *Odontopus varicornis* is composed of two ovaries, each consists of five telotrophic type of ovarioles. The ovary during fully mature turn into yellow in colour due to heavy accumulation of yolk spheres in the terminal oocytes. Telotrophic ovarioles contain a single usually huge cluster of germ cells. The cluster consists of several oocytes that are linked to a common, ovarioles located, trophic compartment, usually including numerous trophocytes. The ovary showed some remarkable changes in the insects treated with sublethal concentration of mercury (25 ppm for 48 h). In treated insects the *Tunica propria* and other epithelial sheath of the terminal filament exhibited disintegration of oogonial cells, nutritive cord, trophocytes and cytoplasmic vacuolization.

Key words : *Odontopus varicornis*, Oogonial cells, Nutritive cord, Trophocytes.

INTRODUCTION

Insect ovaries are composed of several ovarian tubules termed ovarioles, the classification of the ovary type is essentially based on the general architecture of the ovariole but most of all on the analysis of the ultimate fate of the developing germ cells (King and Devine, 1958; Bunning, 1994). The panoistic ovarioles all germ cells can become oocytes and consequently egg cells. In meroistic ovaries divisions of cells are followed by incomplete cytokinesis so that cluster (clones) of sibling cells (cystocytes) are formed. The cystocytes within the cluster remain connected by intercellular bridges forming a specialized syncytium. Nevertheless their forming germ cells do not share a common fate but become diversified into oocytes and nurse cells (trophocytes). The trophocytes are usually polyploidy and synthetically active. Their primary function is to supply the growing oocytes with various macromolecules (mainly RNPs). Within meroistic ovaries, two basic categories have been distinguished, polytrophic and telotrophic. In polytrophic ovaries, each ovariole houses several distinct clusters that together with their somatic follicular coverings form separate functional subunits, termed egg chambers. Within each egg chamber only one oocytes develops, being connected with a group of its own nurse cells. Telotrophic ovarioles contain in a single usually huge, cluster of germ cells. The cluster consists of several oocytes that are linked to a common, anteriorly located, trophic compartment (tropharium), usually including numerous trophocytes.

A great deal of work has been undertaken to understand the structural organization of insect ovaries. This includes the investigation of Rajender (1984), Sarnal (1982), Dhanam (1984), Kalavathy (1988), Nagappan (1989) and Rajasekara Pandian (1994) on Panoistic ovaries, King and Devine (1958), Ramalingam (1971) and Matsuzaki (1978) on polytrophic ovaries and Teresa Szklarzewicz *et al.* (1992) on telotrophic ovaries of insects. These studies have elucidated the histoarchitecture of ovarian tissues, the role of follicle cells, nurse cells and oocytes in vitellogenesis and the neuroendocrine regulation of ovarian development. Several studies had been undertaken to understand the histopathological changes in different tissues of insects due to treatment with toxicant such as endosulfan (Sabesan and Ramalingam, 1979), malathion (Kabeer Ahmad Sahib *et al.*, 1980), monocrotophos and bendiocarb (Rajender, 1984, 1986 a), sevin (Khillare and Wagh, 1989) and endosulfan (Sumathi *et al.*, 2001). The observation led to investigate the effect of heavy metal mercury on the ovary of adult female *Odontopus vacicornis*.

MATERIALS AND METHODS

The adult control and treated *O. varicornis* were kept separately after 48 hours, they were dissected under binocular microscope by using Ringer solution (Ephrussi and Beadle, 1936). The Ringer was subsequently removed and the tissue was fixed in Bouin's fluid for 24 hour. Later, the tissue was processed by adopting standard histological techniques (Gurr, 1958).

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