

Histopathological Alteration in Integument And Intestine of Species *Hotanta tamulus* from Malakoli Region Nanded District (Maharashtra)

Abstract

Scorpion follow fossorial mode of life for managing adoptive character. So it is very difficulties in operation during summer. In some invertebrate animal histopathological study throughout to year is difficult due to non-availability of animal. So it is need to study what changes are occurs while summer why death rate is more in summer is try to study by using histological study of more than 200 animal and found conclusion.

Keywords: Acclimated, Anaesthetized, Hematozylene, Testostracum, Epiostracum, Hypostracum Etc

Introduction

Live scorpion specimens were studied with respect to various criteria like morphology, anatomy, histology, etc. Histology is an important branch of biology which deals with study of cells and tissue. It helps determining the action of toxicants or pollutants on the body tissue of organism and their adverse effects. Histopathology deals with the study of pathological changes induced in the microscopic structure of body tissue. Any particular alteration of cell may indicate the presence of disease or the effect of toxic substances. In scorpion it is observed that external organs are affected due to toxic chemicals causing erratic, movement loss of equilibrium increased fungal infection and lesions on head and cephalothorax finally leading to death. Due to fungal infection whitish mass is deposited over body surface. It may disturb bodily functions and cause death. It may be attributed to significant damage caused to the internal organs such as liver, muscle; heart, intestine, book lungs etc.

Thus, histopathological study gives useful data concerning changes in tissue prior to external manifestation. Numerous histopathological changes have been reported in scorpion exposed to a variety of pollutants.

Toxicants impair the metabolic & physiological activities of the organism. Physiological study alone does not give a complete understanding of pathological condition of tissue under toxic stress. Hence, present investigation was undertaken with a view to study the histopathological changes in vital tissue.

Material & Method

A laboratory acclimated animal was anaesthetized and used for all the primary observations and kept in a dissecting tray having dorsal surface upwards. Freshly collected healthy animals were selected for histopathological study. They were dissected and tissue like Integument, hepatopancreas, book lung, heart, intestine, testis, and poison gland separated from animal immediately.

The tissues were fixed in aqueous Bouin's fluid for 24 hours and then processed through graded series of alcohol, cleared in xylene and embedded in paraffin wax. Sections of 6 μ thickness were cut and stained with Hematoxylene and Eosin and later on screened and photographed by micro photography.

Histopathological Procedure before Block Preparation

Wash the tissue in bouins fluid in 24 hours and lithium carbonate washing for two minute then washed in different grades of alcohol like 30%, 50%, 70%, 90% and 100% for 24 hours each.

Procedure after Block Preparation (Double Staining Procedure)

Fix the material on slide with fresh egg albumin, wash in tap water for two minute and stain in hematozylene for two minute. Destain the slide

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in acid water and wash in tap water each for 2 minutes. Dehydration is made in 30, 50, 70 % alcohol for 5- 10 minutes each and stain in eosin for two minute. Further dehydration is carried out in 90 and 100 % of alcohol each for 5 – 10 minutes. Clear the

slide in xylol or clove oil for 1-2 minutes and mount in DPX immediately.

The slides are dried and washed with xylene and cleared. The clear slides are screened and photographed by microphotography.

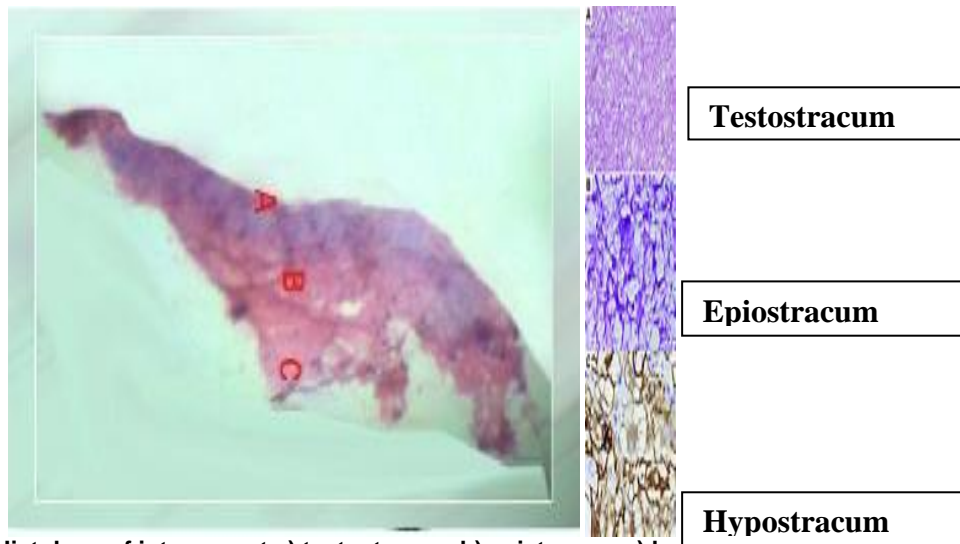


Fig. No. 1 Histology of integument a) testostracum b) epiostracum c) hypostracum

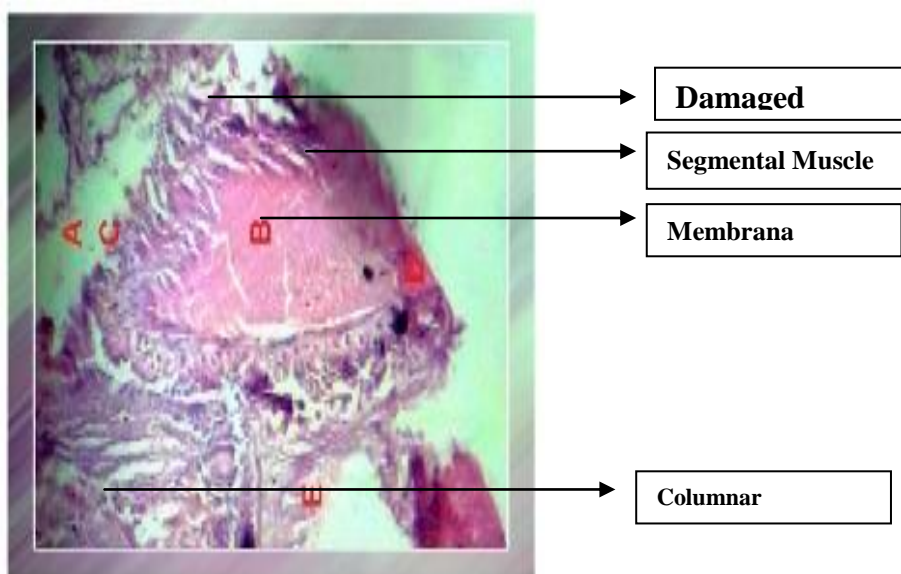


Fig. No. 2 Histology of intestine a) Segmental muscle b) membrana propria c) Columnar epithelium d) Damaged Cristae

Observation and Results

Fig. 1 shown that body wall is formed of three layers i. e. the outer superficial layer testostracum and middle layer epiostracum and third deep lamellar layer hypostracum. In the body of chitin two types of canals are present. One in hard part of integument which is smooth walled and reaches the surface of chitin. The lumen is occupied by protoplasmic material containing rod shaped nuclei and pigment granules. Second canal is broader and is found in softer part of integument. The wall of this canal is supported by circular rings. It appears to perforate the chitin. The sculpture on integument is of

two types. One dermatidia which are solid, and second caelodermitidia which is hollow with a cavity in integument and also on cristae, tarsal, claws, spine, spur etc. There are least changes occurring in internal structure of integument during summer the middle layer epiostracum is to some extent thin.

Fig. 2 of internal structure of intestine shows inner epithelial layer called membrana propria. It consist columnar epithelial cells having nuclei. Membrana propria is surrounded by circular and longitudinal muscle fibers. These muscles are surrounded by pads of segmental muscle. The inner finger like projections of intestine are damaged during

summer season and shrinkage occurs more in this part. Inner finger like projection is surrounded by pads of muscle fibers which help in pressing and ejection of waste matter. Intestinal villi secrete digestive juices into lumen of intestine.

Aim of the Study

To Study histopathological alterations in Scorpion species *Hotanta- tamulus*.

Discussion

The outer superficial layer testostracum, middle epiostracum and third deep lamellar layer hypostracum was studied by *Anderson J.M* and *Ewen C.J* (1973); *Babin D. R.* and *Watt D. D.* (1974), in *Heterometrus fulvipes*. In the body of chitin two types of canal are present. This first type of canal was observed in *Heterometrus bengalensis*. Second canal is broader and is found in softer part of integument by *Murthy*. The wall of this canal is supported by circular rings, which appear to perforate the chitin *Chakrabarthy D.K* (1969); *Chaubey M. Kand Upadhyay R.K.* (2008), in scorpion and cockroach species. The sculpture on integument is of two types. These sculptures were observed by *Domichete G.K and Taylor V.K* (1983); *Farrer J.E and Shull* (1999); *Farley R. D.* (2001); *Despande S. B., Pandey R and Tiwari A. K.* (2008), in different species of scorpion and crustaceans.

There were no changes in internal structure of integument during season but the middle layer epiostracum is to some extent thinner.

Gardner G.R and Yevich P. (1970); *Krnjevic K.* (1974); *Gutierrerr. M.* (1998), reported toxic lesions in intestine include hyperemia, degenerative changes in tips of villi, loss of structural integrity of mucosal folds and degenerative mucosal epithelium, vacuolation, inflammation infiltration and *Gardner G.R and Yevich P.* (1970), reported number of histopathological changes in intestine. *Establier R.* (1978), reported intestinal toxic lesions like hyperemia, loss of structural integrity of mucosal folds, necrosis, cellular debris, vacuolation in intestine of mugil. *Gutierrerr M. et.al.* (1998), mentioned degenerative changes in tips of villi of *Heterometrus fulvipes* as a result of hypertrophy and hyperchromatia. *Shastri K. V., Gupta P. K.* (1978), reported toxic lesions due to hypertrophy and necrosis in *Channa punctatus*. *Anees M. A. et.al.* (1996), reported toxic lesions. Necrosis in villi of intestine was also reported by *Abdel Ghani L.M: El-Asmer* (2009).

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