OBSERVATIONS ON THE PANCREATIC ACINAR CELLS OF BAT (MEGADERMA LYRA LYRA)

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Abstract : Megaderma lyra lyra is the carnivorous bat classified in order Chiroptera of Class Mammalia. This order Chiroptera contain more than hundred genera which shows variable feeding habits like frugivorous, insectivorous, nectar eater, carnivorous, sanguivorous etc. In the present work the exocrine pancreas of Megaderma lyra lyra were studies. The pancreas of Megaderma lyra lyra was axe or hatchet shaped having two lobes one shorter than the other consisting of head, neck and body. The pancreas contain exocrine as well as endocrine part. As everyone knows exocrine pancreas secrets enzymes helps in digestion of food and endocrine part secretes hormones helps in maintenance of sugar level in blood. The exocrine part of the pancreas have active acinar cells at before feeding stage and resting acinar cells are dominant during after feeding stage, both these cells .showing variable nuclear and cytoplasmic organization.

Keywords : Bat, Pancreas, Acinar cell and Megaderma lyra lyra.

Introduction : Megaderma lyra lyra is an unique flying mammal representing order Chiroptera of Class Mammalia. This order Chiroptera contain more than hundred genera which shows variable feeding habits like frugivorous, insectivorous, nectar eater, carnivorous, sanguivorous etc. Megaderma lyra lyra is the carnivorous bat feeds on smaller invertebrates and vertebrates. In this work I like to find out is there any cellular diversity in the exocrine pancreas of Megaderma lyra lyra at different stages of feeding condition.

Methodology : *Megaderma lyra lyra* are nocturnal flying mammals that leave their roost at dusk and return back at dawn. The animals were collected with the help of butterfly net before they leave their roost for feeding and immediately came back to roost in the morning after feeding. The *Megaderma lyra lyra* was collected from kandri mines near Mansar of Nagpur district located 21'24'40° N, 79'15'54°E. The bats were anesthetize with the help of chloroform and weighted. The pancreas was dissected out and weighted and fixed in neutral buffer formalin and processed for histological slides. The slides were stained with haematoxylene eosin, Mallory Heidenhen azan stain, Ewens aldehyde fuschin method and Gomori method for histological and cytological studies. The sizes of the nucleus were measured with the help of ocular micrometer and the data were discussed in the light of published work.

Observations : The pancreas of *Megaderma lyra lyra* was found in the mesenteries of the alimentary canal and it is axe or hatchet shaped consisting of head, neck and body having a length of 0.8 to 1.2 cm.(Fig. 1) The weight of pancreas ranges between 0.112 to 0.172 gm. The pancreas weight body weight ratio was found to be 3.11 to 4.41 mg/gm. weight of body.

The pancreas consist of exocrine acinar cells which secrets enzymes and endocrine islet cells which secrets hormones. Histologically the exocrine pancreas comprises the lobules of compactly packed acinar cells which are 6 to 12 in number. The acinar cells are pyramid in shape with spherical nucleus with peripheral or diffuse chromatin material having a diameter of 3.57 µ to 5.35 µ. The subnuclear and lateronuclear area of acinar cell appear prominently basophilic. These are the active cells found dominant in before feeding stage. (Fig 2) In the after feeding stage the acinar cells are cuboidal with oval nuclei having a size of 2.85 µ to 4.28 µ having diffuse or peripheral chromatin material. These are the resting acinar cells found prominent during after feeding stage. These are the resting cells. (Fig 3)

Fig. 1 Pancreas of *Megaderma lyra lyra* shows head neck and body.

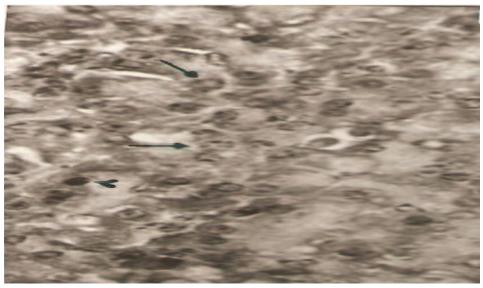

Fig 2 T.S. of pancreas of Megaderma lyra lyra shows active acinar cells with spherical nucleus HE X 252(See Text)

fig 3 T.S. of pancreas of *Megaderma lyra lyra* shows Resting acinar cells having oval nucleus (arrow) HE X 630 (See Text)

Discussion : The pancreas found in the loop of mesenteries as reported by Raghukumar (1975) in bandicoot it shows arborization, Bloom and Fawcett (1975) and Sonia A. etal. (1987) differentiated pancreas into head, neck and tail. The pancreas of *Megaderma lyra lyra* found in the mesentaries and also shows morphological variation as shown in Fig. 1. The weight of the pancreas was also found to be 3.11 to 4.41 mg./ gm.of body weight it was reported 13.69 mg./gm.of body weight in Suncus murinus and 3.65 mg./gm.of body weight in rats reported by R. Dahare & A. A. Dhamani (2009) and 5.28 mg./gm.of body weight in the bat *Scotophilus heathi*. Ascerted by Rajesh Dahare (2013). Bloom and Fawset observed three types of acinar cells namely active, resting and exhausted. Singh etal. (1980) and Mukharjee Gayatri (1986) also observed three different types of cells in cattles and sheep respectively. In my studies I observed two types of cells active acinar cells dominant at before feeding stage and resting acinar cells dominant at after feeding stage. The diameter of the nucleus of resting cell is found to be less as compare to active acinar cells.

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References:

1. Bloom and Fawcett (1975) A Text Book of Histology 10Th Edition W. B. Saunders Company Philadelphia
2. Mukharjee Gayatri etal. (1986) Acinar cell types of sheep pancreas. Indian J. Anim. Sci.56 (9) : 930-934.
3. Raghukumar V (1975) Studies on the some Endocrinological aspects of the pancreatic islets in the Bandicoot *Bandicota bengalensis*(Gray) . Ph.D Thesis Nagpur University Nagpur
4. Rajesh Dahare (2013) Diversity in the pancreatic acinar cells of bat *Scotophilus heathi.* Indian Stream Research Journal Special issue. :64-67
5. R. Dahare and A. A. Dhamani (2009) Histological localization of pancreas of *Suncus Murinus* and *Rattus rattus*. Hislopia Journal .2 (2) :83-86.
6. Singh L. P. etal. (1980) Note on the acinar cell type in the pancreas of domestic animals. Indian J. Anim. Sci. 50 (9) : 169-172.
7. Sonia A. Wolfe –coote and D. F. Du toit (1987) Distribution of the cell types of the islets of Langerhans throughout the pancreas of the Chacma baboon Anat. Rec. 217: 172-177.

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