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## Light microscopic studies on spleen, lung and kidney of pygmy hog (*Porcula salvania*)

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#### Abstract

In a light microscopic study, spleen, lung and kidney of Pygmy hog (*Porcula salvania*) were observed. The spleen was covered by a thick layer of capsule. The parenchymatous tissue of spleen composed of red pulp and white pulp. In lung bronchiole, lymphoid aggregation, smooth muscle and mucosal fold of bronchiole were observed. The kidney of Pygmy hog was surrounded by a capsule and it was composed of cortex and medulla. In cortex, glomerulus, collecting tubule, and ascending and descending loop of Henle were observed. The collecting tubules were lined by simple cuboidal epithelium. The diameter of ascending loop was larger compared to the diameter of descending loop of Henle.

**Keywords:** Light microscopic, spleen, lung, kidney, pygmy hog

#### Introduction

The pygmy hog (*Porcula salvania*) is the world's smallest suid [1]. The pygmy hog was once abundant in the Himalyan foothills from Uttar Pradesh to Nepal, now confined to small isolated pocket of Manas Tiger Reserve and reintroduced population in Sonai-Rupai Wildlife Sanctuary, Orang National Park and Bornodi Wildlife Sanctuary of Assam, India [8]. The information on the spleen, lung and kidney of pygmy hog are very scanty. Since there is very scant literature on the light microscopic studies on spleen, lung and kidney of Pygmy hog, being a critically endangered animal, hence the present study was designed to generate baseline anatomical information of these vital organs.

#### Materials and Methods

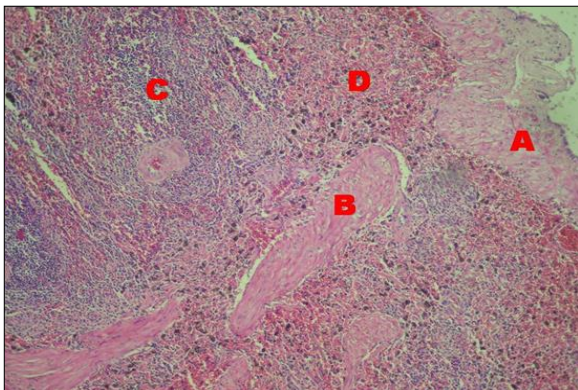
In the present investigation, tissue samples of spleen, lung and kidney were utilized of one adult Pygmy hog near about 5 years old. These samples were obtained from Pygmy hog Conservation Programme (Research and Breeding Centre), Indira Nagar, Basistha, Assam. Immediately after the death of the animal, tissue sample of spleen, lung and kidney were dissected out and fixed in 10% formalin. I have already took the permission from the concern authority. After that, the tissue samples were processed for Paraffin embedding method. Paraffin sections were cut in six micron thickness and stained with Haematoxylin and Eosin method for cellular details (Luna, 1968) [7].

#### Results and Discussions

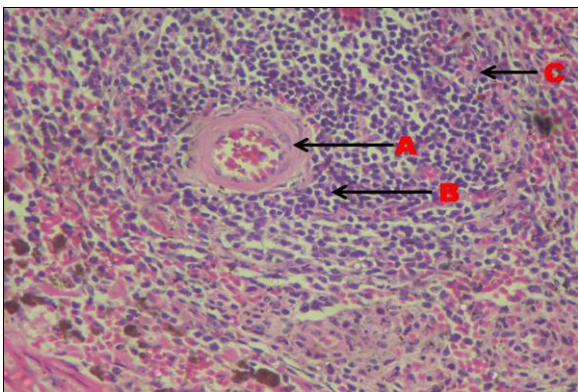
The present investigation was carried out on the tissue sample of spleen, lung and kidney of Pygmy hog for light microscopic studies. The light microscopic studies revealed that, the spleen was covered by a capsule and trabeculae was extended from the capsule (Fig.1). The trabeculae contained smooth muscle for contraction of the spleen for blood circulation (Fig.3). It also contained red pulp and white pulp. This finding was total agreement with the finding of Usende *et al.*, (2014) [1] in Nigerian indigenous pig (*Sus scrofa*) The colour of the red pulp was red due to RBC and it took the colour of acidic stain (Eosin). The colour of white pulp is white due to lymphocytes and it took the colour of basic stain (Haematoxylin). This finding was in accordance with the finding of Bacha and Bacha (1990). Similar observation was reported by Deepali *et al.*, (2014) [3]. In the centre of white pulp one large blood vessel along with mantle and marginal zone was observed (Fig.2). In current investigation, bronchiole along with lymphoid aggregation and alveoli were observed in the lung tissue of Pygmy hog. The mucosal fold of bronchiole was lined by simple cuboidal epithelium and it contained layer of smooth muscle (Fig.4). The smooth muscle helps in movement of the lining epithelium of bronchiole. The bronchiole was surrounded by alveoli.

The alveoli were lined by simple squamous epithelium. These findings were corroborated with the findings of Kalita (2014)<sup>[4]</sup> in Mizo local pig (Zo vawk).

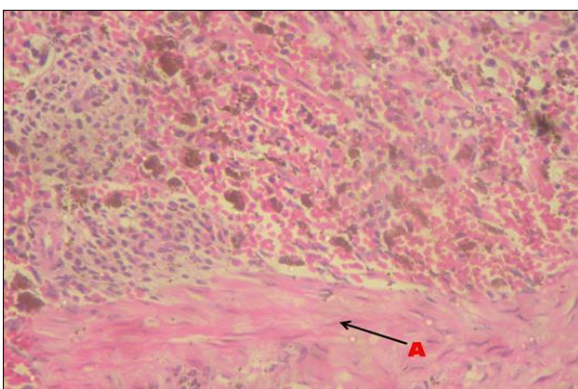
The kidney of Pygmy hog was surrounded by a capsule and it was composed of cortex and medulla (Fig.5). These finding was in agreement with the finding was of Sikarwar *et al.*, (2016) in Large white Yorkshire pig (*Sus scrofa*). In cortex, glomerulus, collecting tubule and ascending and descending loop of Henle were observed (Fig.6). The collecting tubules were lined by simple cuboidal epithelium. Similar finding was reported by Hassaneen and Shartoot (2014)<sup>[6]</sup> in kidney of Guinea pig. The diameter of ascending loop was larger compared to the diameter of descending loop of Henle (Fig.7). The lining epitheliums of ascending and descending loop of Henle were simple cuboidal epithelium.



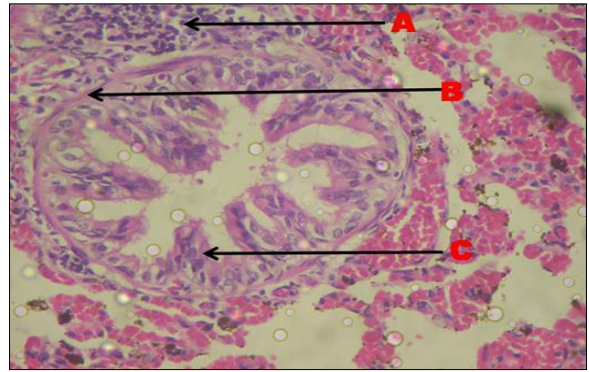
**Fig 1:** Photomicrograph showing the capsule (A), Trabaculae (B), White pulp (C) and Red pulp (D) of spleen of Pigmy hog (*Porcula salvania*), H&E,10X



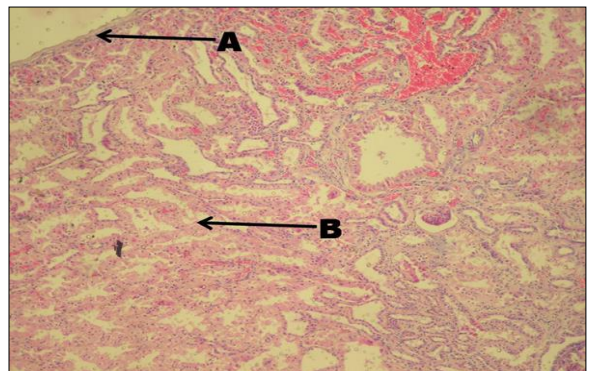
**Fig 2:** Photomicrograph showing the blood vessels (A), mantle zone (B) and marginal zone (C) of germinal centre of spleen of Pygmy hog (*Porcula salvania*).H&E, 40X.



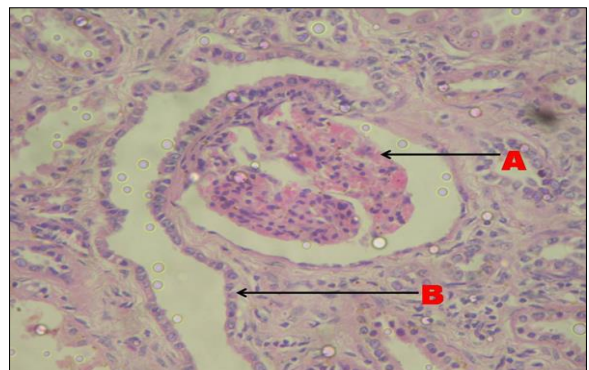
**Fig 3:** Photomicrograph showing the smooth muscle (A) of trabaculae of spleen of Pygmy hog (*Porcula salvania*)



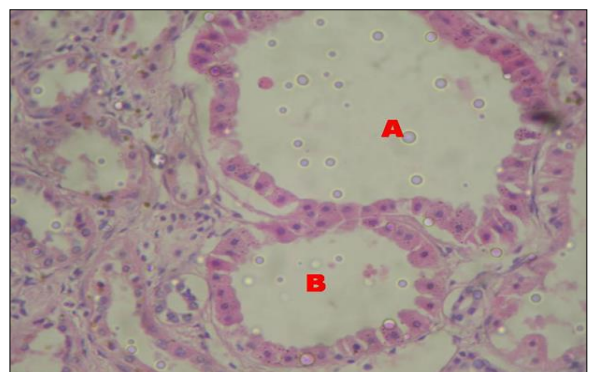
**Fig 4:** Photomicrograph showing the lymphoid aggregation (A), smooth muscle (B) of bronchiole and low pseudo stratified ciliated columnar epithelium (C) of bronchiole of lung of Pygmy hog (*Porcula salvania*)



**Fig 5:** Photomicrograph showing the capsule (A) and cortex (B) of kidney of Pygmy hog (*Porcula salvania*), H&E,10X.



**Fig 6:** Photomicrograph showing the glomerulus (A) and simple cuboidal epithelium (B) of collecting duct of kidney of Pygmy hog (*Porcula salvania*),H&E,40X.



**Fig 7:** Photomicrograph showing the ascending loop (A) and descending loop of Henle of kidney of Pygmy hog (*Porcula salvania*), H&E,40X



### Summary and Conclusion

In present investigation, the spleen of Pygmy hog was covered by capsule and trabeculae was extended from the capsule. It also contained red pulp and white pulp. The bronchiole along with lymphoid aggregation and alveoli were observed in the tissue of lung of Pygmy hog and it contained smooth muscle layer. The bronchiole was surrounded by alveoli. The kidney of Pygmy hog was surrounded by capsule and it was composed of cortex, and medulla. In cortex, glomerulus, collecting tubule and ascending and descending loop of Henle were observed. These observations will be helpful for wildlife veterinarians those who are working in wildlife for veterolegal cases and disease control regime.

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