MORPHOLOGICAL STUDY ON THE PSEUDOBRANCH OF CARP (*CYPRINUS CARPIO*)

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The vascular system and histological structure of the pseudobranch (PB) of carp were light and electron microscopically studied by making Mercox corrosion cast preparations. The results obtained in this study were as follows.

An afferent pseudobranchial artery originated from an afferent mandibular artery which came from the ventral branch of the 1st efferent branchial artery, and it diverged into two branches just before it entered the PB. An afferent pseudobranchial artery branched off afferent pseudobranchial filamental arteries to one side, which then branched off afferent pseudobranchial lamellar arterioles bilaterally to make lamellar capillary networks, and efferent pseudobranchial lamellar arterioles converged to become efferent pseudobranchial filamental arteries. An efferent pseudobranchial artery consisted of the confluent efferent filamental arteries. The efferent pseudobranchial artery gave off two branches; one connected with the efferent pseudobranchial artery from the opposite-side arteries, and the other flowed into the choroid to constitute the rete mirabile of the eye.

Histologically, the PB of carp was composed of pseudobranchial lamellae, epithelial tissues and connective tissues. Interlamellar and interfilamental epithelial tissues almost covered the pseudobranchial lamellae, and the latter was elongated to the opercular epithelium. The pseudobranchial lamellae consisted mainly of pseudobranchial cells, pillar cells and endothelial cells. Electron microscopically, the pseudobranchial cells were furnished with abundant mitochondria and tubular structures. The tubular structures were arranged parallel to the long axis of the mitochondria and they opened into the basal side of the cells. The pillar cells extended a lot of long cytoplasmic processes and were occasionally interdigitated with each other by the processes. Some intimate associations between the pseudobranchial cells and the blood capillary through the PB were noted. These structures suggested that some material exchanges may occur between the pseudobranchial cells and the blood in the PB.

The present morphological results suggest that the PB microvasculature of carp was rather more similar to that of the hemibranch than to that of the holobranch, and that the PB of carp may possibly play a role in the regulation of blood environments before flowing into the choroids of eyes.