Study of the respiratory vasculature of the silver carp (*Hypophthalmicthys molitrix*) gill by vascular casting and scanning electron microscopy (SEM)

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Abstract

The fish gill is the main organ of respiratory gas exchange and also plays dominant roles in osmotic regulation, acid-base balance, and excretion of nitrogenous wastes. Fish gill show one of the most complex vascular structure but some anatomical differences can be observed among various species of the fish. Vascular corrosion casting coupled with scanning electron microscopy is a standard method, which allows three-dimensional visualization with good resolution of the micro vessels and fine capillaries of organs. IN the present study, the gill fine vascular structure (arterio arterial pathway) of silver carp (*Hypophthalmicthys molitrix*) was studied by using the vascular corrosion cast technique with scanning electron microscopy (SEM). According to the results, the general pathway of blood flow of this fish was like the other teleost but showed some differences in the gill vasculature details. Probably, the smaller interconnected Ampulla and the longer vascular channel with more branches of vessels of silver carp gill, was relating to the low oxygen demand and metabolism rate of *Hypophthalmicthys molitrix.*

Keywords: *Hypophthalmicthys molitrix*, vascular casting, Scanning electron microscopy.

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