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SHORT COMMUNICATION

A reliable method for repetitive bleeding in striped murrel, *Channa striata* (Bloch)

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Blood is the best choice for minimal invasive tissue sampling in fish, and the method of blood withdrawal is crucial for proper haematological and biochemical analyses. Contamination with enzymes and other constituents from the surrounding tissue is the main source of error with blood sampling (Hile 1982). Therefore, an effective and clean blood sampling method should be used. There are several blood sampling methods for fish in use, including tail ablation, dorsal aorta puncture, cardiac puncture, caudal vein puncture, cardiac severance and caudal vein severance. The most recommended fish blood sampling techniques are cardiac puncture and caudal vein puncture (Blaxhall 1972). Cardiac sampling requires special techniques and experience, as there is the possibility of injury to the heart muscle, which would cause leakage of tissue components into the sample (Gaudet, Racicot & Leray 1975). In caudal vein puncture, the blood vessel is located at the ventral surface of the spine, and experienced technicians should perform the procedure to avoid spinal injury during sampling. Another method of blood sampling rarely practiced is cardinal vein puncture or cuverian duct puncture. This method of blood sampling was carried out in red sea bream, *Chrysophrys major* (Ikeda, Tsuda, Kurawaka, Fukao & Shirasu 1985) and tilapia, *Oreochromis* simple. Practising cardinal vein puncture on a few fish is sufficient to learn the method. Compared with other blood sampling methods, cardinal vein blood sampling causes minimal damage to surrounding tissues.

The only method of blood sampling reported for *Channa striata* is caudal vein puncture (Thompson, Lilley, Chinabut & Adams 1997; Miles, Kanchanakhan, Lilley, Thompson, Chinabut & Adams 2001). As the quantity of blood that can be drawn through caudal vein puncture is small and the bleeding is not always successful, collecting blood from the cardinal vein seems to be a useful alternative. In *C. striata*, a pair of anterior cardinal veins located near the heart region collects venous blood from the respiratory organs (Figs 1 and 2). Each anterior cardinal vein begins by collecting blood from the eye and the adjacent parts, transverses the orbit, and then comes to lie on the ventral surface of the cranium in the air-chamber above the dorsal extremities of the branchial arches. The anterior veins collect blood from the brain and other parts of head (Shailendra & Devendra 1956). Striped murrels were purchased from a fish farmer and stocked in 150 L fibre reinforced plastic tanks at a density of 4 g L^{-1}. Fish were fed *ad libitum* with a balanced fish feed. Two size classes of 100 ± 50 and 700 ± 50 g were