Development of sensory organs in larvae of African catfish Clarias gariepinus

Abstract

African catfish Clarias gariepinus hatched with morphologically immature features; however, sensory organs developed rapidly with fish growth. Although the eyes of newly hatched larvae were immature without pigment, in 2 day-old larvae, the retina of the eyes had already developed except for the rod cells. No free neuromasts were observed in newly hatched larvae. In 1 day-old larvae, however, free neuromasts were observed on the head and trunk. Free neuromasts increased with larval growth. Newly hatched larvae had simple round-shaped otic vesicles; however, all sensory epithelia of the inner ear were observed until the larvae were 3 days old. Two day-old larvae swam horizontally, had sharp teeth, commenced ingesting rotifers and also artificial feed (small-size pellets) under both light and dark conditions; by then the larvae already had many taste buds. Three day-old larvae showed negative phototaxis and cannibalism by eating their conspecifics. Most of the free neuromasts observed in this study had the peculiar feature of many microvilli around the sensory cells on the apical surface. Detected free neuromasts as ordinary type lateral-line organs were not observed in previous reports in teleosts. In 10 day-old larvae, there were two lines of free neuromasts on the flank and lower edge of the trunk; presumptive canal neuromasts were oval shaped and had begun to sink under the skin. The direction of maximum sensitivity of the neuromasts was parallel with the longitudinal axis of their elliptical apical surface.