

Penjun Mechonkit 2008: Localization of Serotonin and Its Role on Spawning and Parturition in Freshwater Pearl Mussel, *Hyriopsis (Hyriopsis) bialatus*. Master of Science (Biology), Major Field: Biology, Department of Zoology. Thesis Advisor: Associate Professor Uthaiwan Kovitvadhi, Ph.D. 113 pages.

The macroscopic and microscopic structures of male and female nervous systems of freshwater pearl mussel, *Hyriopsis (Hyriopsis) bialatus* are described. The nervous systems of both sexes are composed of cerebro-pleural ganglion, pedal ganglion, and visceral ganglion. Mostly neurons appear at the rim of the ganglion. The localization of serotonin (5-HT) in the nervous system was investigated by using Immunoperoxidase and Immunofluorescence technique. 5-HT was found in neurons and nerve fibers of three ganglia in both sexes. Moreover, visceral ganglion had more 5-HT than other ganglia and the visceral ganglion of the female had more 5-HT than male also. Furthermore, the visceral ganglion sent nerve impulses into the branchial nerve of demibranch and outer demibranch of both sexes and more 5-HT was found in the inner demibranch. Gomori's fuchsin staining showed that the neurons of all ganglia might be the neurosecretory cell. For spawning and parturition, female gonads and demibranch were injected respectively with different concentrations. 5-HT at 10^{-3} M was the most effective dose for the development of glochidia within 15 ± 4.3 days and parturition; the gravid females could release glochidia from outer demibranch within 2.6 ± 2.4 h. In contrast, fluoxetine had a low effect within 21.7 ± 0.3 h. This study suggests that 5-HT is a suitable dose for parturition, which achieves high product and simplifies culturing glochidia in artificial media.

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