

Histoistological studies on hermaphroditism, gametogenesis and cyclic changes in the structures of marsupial gills of the introduced Asiatic clam, *Corbicula fluminea*, and the Korean marsh clam, *C. leana*

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Abstract

Marsh clams *Corbicula fluminea* and *C. leana* are functional hermaphrodites. They usually appeared to be surrounded by numerous spermatozoa in the hermaphroditic follicles. In both species, follicular ganglia (consisting of the neuronal fiber and neuronal soma-like cells at its periphery) are associated with neurosecretion and the differentiation of complex innervated nerve structures during spermatogenesis. These are widely distributed in the follicles in the ripe and spawning stage. *Corbicula fluminea* and *C. leana* have two pairs of gills and the inner-demibranchs act mainly as marsupia. The non-marsupial demibranchs are not separated, but in the marsupial demibranchs, cyclic changes in the structures of the inner-demibranchs of the gills appear in accordance with depletion of ripe eggs during incubatory periods and production of mature and ripe eggs during non-incubatory periods. Reproduction of triploid *C. fluminea* and *C. leana* may occur by parthenogenesis without self-fertilization (or cross-fertilization) by eggs and sperms. DNA contents of the somatic cell (gill) and gamete cell (spermatozoa) of *C. fluminea* are the same. Because reproduction is parthenogenetic, numerous spermatozoa may participate in activation of the mature eggs and the egg cleavage as a stimulus only for parthenogenesis in the same hermaphroditic follicle or the gonopore.