Spawning behaviors induced by neurosecretory hormones in echinoderms

Michiyasu Yoshikuni[1], Kaoru Ohno[2] and Keisuke Yamano[3]

[1]School of Agriculture, Kyushu University, [2]National Institute for Basic Biology, [3]National Research Institute of Aquaculture, Japan.

Echinoderms have been important animals in the study of hormonal control of reproduction. Recently, neurosecretory peptides, Cubifrin and a relaxin-like peptide have been found to induce meiotic resumption of oocytes (oocyte maturation) in sea cucumber and starfish, respectively (ref 1, 2). These peptides induced the spawning of eggs and sperms by the injections into coelomic cavities of sexually-matured animals. Interestingly, the spawning of gametes is provoked after the characteristic behaviors of the injected animals. The behavior is composed of a series of motions. In sea cucumber, the injected animal accelerated prowling soon, consecutively climbed a stone pile set at the bottom of the aquarium. At the top of the pile the animal rose and swung a head and started spawning. While oocytes maturation occurred about 1 hr after the injection, the prowling initiated shortly after the injection. This may give the possible role of Cubifrin to induce the spawning behaviors independently of the occurrence of oocyte maturation. The similar phenomenon was also observed in starfish. These phenomena will give useful models in the study of behavioral neuroscience.

1. Kato *et al.*, Dev. Biol., 326 (1), 169-76, 2009.
2. Mita, Yoshikuni *et al.*, PNAS, 106 (23), 9507-12, 2009.