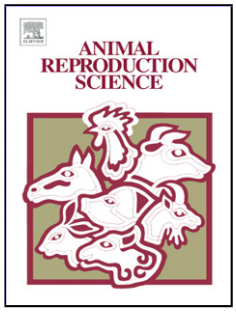

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Spermatophore affects the egg-spawning and egg-carrying behavior in the female giant freshwater prawn, *Macrobrachium rosenbergii*

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ABSTRACT

In crustaceans, mating occurs during the ecdysis after female molting. During this period, a male transfers its spermatophore into a female which, in some species, stores the spermatophore for a long period prior to spawning and fertilization. However, in some species including the giant freshwater prawn, *Macrobrachium rosenbergii*, the male deposits its spermataphore onto the external surface of the thoracic segment of the female which affects the spawning time and maternal behavior. This study investigated the spawning behavior of the *M. rosenbergii* females, which was divided into pre-spawning, spawning, and post-spawning phases. It was revealed that mated female prawns with attached spermatophore exhibited an earlier spawning than unmated individuals, leading to assessment of the factors that may elicit this phenomenon. Four groups of female prawns were allocated to groups including mating females with spermatophore still attached, mating females with the spermatophore removed, artificially inseminated females with spermatophores, and an unmated control. There was a significant reduction in the time of egg-spawning in the presence of spermatophores, and the mating activity was also a contributing factor. Furthermore, over 90% of the mated and artificially inseminated females in which spermatophores were deposited carried the eggs in the abdominal brood chamber until completion of embryonic development while others discarded the eggs within 2 days post-spawning. This study implies that the spermatophore may contain ovulation-inducing factors which stimulate an earlier spawning and fostering of brooding behavior.

Keywords

Spawning behavior, Spermatophore deposition, Artificial insemination, Spawning time, Brooding behavior

Introduction

Egg-spawning by female crustaceans is a process through which release of mature ova occurs into the surrounding aqueous environment to allow successful external fertilization to