

Abstract

# Ecdysone Receptor (EcR) Role in the Oogenesis of the Cockroach *Blattella germanica* †

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20-hydroxyecdysone (20E), the active form of the steroid hormone ecdysone, is crucial in the female reproductive physiology of insects, as it participates in the regulation of several processes throughout oogenesis, including the maintenance of the germinal stem cell niche, follicle differentiation, or choriogenesis, among others. Its role in oogenesis has mostly been studied in holometabolous species with meroistic ovaries, although the exact role is still largely unknown. To further explore the function of 20E in the oogenesis of a phylogenetically basal species, and have a wider evolutionary perspective of its function, we use the cockroach *Blattella germanica*, a hemimetabolous insect with panoistic ovaries, as a model. Injection of 20E in newly emerged last instar nymphs caused an increase in the number of differentiated ovarian follicles and inhibited the expression of some Halloween genes in the ovaries. By depleting the Ecdysone Receptor (EcR) expression in sixth instar nymphs, we observed an upregulation of the Halloween genes in the ovaries. Moreover, the germarium of EcR-depleted nymphs appears swollen, and there is more expression of EcR in the first differentiated ovarian follicles. The results obtained suggest that EcR expression in the ovary is independent of 20E levels in hemolymph, and its role changes in the different ovarian cell lines.

**Keywords:** Insect ovary; ecdysone; 20E; Halloween genes