



## Is the rapid post-mating inhibition of pheromone response triggered by ecdysteroids or other factors from the sex accessory glands in the male moth *Agrotis ipsilon*?

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In many animals, male copulation is dependent on the detection and processing of female-produced sex pheromones, which is generally followed by a sexual refractory post-ejaculatory interval (PEI). In the male moth, *Agrotis ipsilon*, this PEI is characterized by a transient post-mating inhibition of behavioral and central nervous responses to sex pheromone, which prevents males from re-mating until they have refilled their reproductive tracts for a potential new ejaculate. However, the timing and possible factors inducing this rapid olfactory switch-off are still unknown. Here, we determined the initial time delay and duration of the PEI. Moreover, we tested the hypothesis that the brain, the testis and/or the sex accessory glands (SAGs) could produce a factor inducing the PEI. Lastly, we investigated the possible involvement of ecdysteroids, hormones essential for development and reproduction in insects, in this olfactory plasticity. Using brain and SAG cross-injections in virgin and newly-mated males, surgical treatments, wind tunnel behavioral experiments and EIA quantifications of ecdysteroids, we show that the PEI starts very shortly after the onset of copulation, and that SAGs contain a factor, which is produced/accumulated after copulation to induce the PEI. Moreover, SAGs were found to be the main source of ecdysteroids, whose concentration decreased after mating, whereas it increased in the haemolymph. 20-Hydroxyecdysone (20E) was identified as the major ecdysteroid in SAGs of *A. ipsilon* males. Finally, 20E injections did not reduce the behavioral pheromone response of virgin males. Altogether our data indicate that 20E is probably not involved in the PEI.

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