



Steroid hormone signaling is involved in the age-dependent behavioral response to sex pheromone in the adult male moth *Agrotis ipsilon*

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Résumé en anglais	<p>In most animals, including insects, male reproduction depends on the detection and processing of female-produced sex pheromones. In the male moth, <i>Agrotis ipsilon</i>, both behavioral response and neuronal sensitivity in the primary olfactory center, the antennal lobe (AL), to female sex pheromone are age- and hormone-dependent. In many animal species, steroids are known to act at the brain level to modulate the responsiveness to sexually relevant chemical cues. We aimed to address the hypothesis that the steroidal system and in particular 20-hydroxyecdysone (20E), the main insect steroid hormone, might also be involved in this olfactory plasticity. Therefore, we first cloned the nuclear ecdysteroid receptor EcR (AipsEcR) and its partner Ultraspiracle (AipsUSP) of <i>A. ipsilon</i>, the expression of which increased concomitantly with age in ALs. Injection of 20E into young sexually immature males led to an increase in both responsiveness to sex pheromone and amount of AipsEcR and AipsUSP in their ALs. Conversely, the behavioral response decreased in older, sexually mature males after injection of cucurbitacin B (CurB), an antagonist of the 20E/EcR/USP complex. Also, the amount of AipsEcR and AipsUSP significantly declined after treatment with CurB. These results suggest that 20E is involved in the expression of sexual behavior via the EcR/USP signaling pathway, probably acting on central pheromone processing in <i>A. ipsilon</i>.</p>
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