

Involvement of multiple hormones in the newt reproductive behavior

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Experiments with the red-bellied newt, *Cynops pyrrhogaster*, of both sexes revealed that their reproductive behavior is regulated by multiple hormones. At the early stage of courtship behavior, the male vibrates his tail vigorously in front of the female partner. Prolactin (PRL) in combination of androgen elicit this behavior acting centrally. The action of PRL is mediated by arginine vasotocin (AVT). A neurosteroid, 7 α -hydroxypregnenolone is also involved in eliciting this behavior. Its effect is exerted through dopaminergic system via D2-like receptor. During the tail vibration behavior, the male releases a female-attracting peptide pheromone to make the female partner sedative and obedient. The synthesis of this pheromone (precursor) by the abdominal gland is enhanced by PRL and androgen and its release from the gland is induced by AVT. The responsiveness to the attractant of the vomeronasal epithelial cells of the female newt is enhanced by PRL and estrogen. At the final stage of courtship, the male newts deposits spermatophores to be picked up through the cloacal orifice of the female. AVT induces the discharge of spermatophores from the cloaca. Thus, PRL, AVT, sex steroids and 7 α -hydroxypregnenolone are considered to be important hormonal factors involved in the reproductive behavior of the red-bellied newt.