

Hormonal induction of maturation in female anguillids – is there a future for the use of steroid implants?

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Abstract

Long-term - typically repeated - application of gonadotropic substances is a prerequisite for acquisition of gametes from freshwater eels maintained in captivity. The weekly administration of fish pituitary preparations, which are inherently variable in terms of quality and composition, is routinely practiced, but success (expressed as fertilizable gametes that can yield robust larvae with high survival rate) has remained erratic.

Gonadotropins mediate their effect in part through steroid hormones: estrogens are strong stimulators of yolk protein synthesis, whereas androgens, at least in eel, promote lipid transport and accumulation into oocytes. Steroids have therefore been incorporated in induced spawning protocols, but their effects have been limited until the development, more recently, of sustained-release delivery devices. Sustained androgen treatment has resulted in changes in oocyte diameter and oocyte cytology in several species of *Anguilla*, but full maturity is not typically achieved. Treatment with androgens has nonetheless proven valuable as a means to limit expenses and to reduce the need for repeated handling of fish. Our most recent findings indicate that co-treatment with androgens and estrogens further advances oocyte development (size, stage) and that fertility may be somewhat improved. We contend that there is ample scope to further develop steroid-mediated approaches to inducing gonadal growth in artificially maturing *Anguilla* spp. Indeed, perceived recent progress on steroid effects warrants its ongoing use in R&D on induced spawning of eel in the future.