

2nd Indo-Global Summit & Expo on

Veterinary

October 26-28, 2015 Hyderabad, India

Dietary manipulation and hormonal biotechnology in advancing gonadal maturation for quality seed production of Indian major carps and catfish

A K Pandey

National Bureau of Fish Genetic Resources, India

The steadily growing importance of culture fisheries has made it imperative that the fish culturists should improve the technique necessary for securing the basic requirement of fish culture namely the production of young ones (fry and fingerlings) for stocking. The artificial propagation technique, presently used, needs constant refinement for obtaining quality fish seed at the desired times of the year. Recent advances in fish endocrinology have led to a better understanding of the hormonal factors involved in the control of gamete production, mode of their action and regulation of their secretion during different stages of reproductive cycle. Environmental stimuli like photoperiod and temperature are perceived by the brain which releases gonadotropin-releasing hormone (GnRH) that binds specifically to receptors in the pituitary gonadotrops and stimulates secretion of gonadotropic hormone (GtH-I, II). The circulating GtH enhances gonadal development and final maturation. GtH regulates ovarian and testicular function by producing maturation inducing steroids, 17α and 20β -dihydroxy progesterone (17, 20-P). The GtH functions at the target site in two ways; it induces synthesis and secretion of estradiol- 17β during pre-vitellogenic phase which in turn induces vitellogenesis or yolk production during post-vitellogenic phase, GtH triggers the synthesis of 17α , 20β -dihydroxy progesterone (17, 20-P) which is responsible for the final maturation leading to ovulation and spermiation. Role of nutrition in brood stock management for quality seed production in fishes has been appreciated during the recent years. Success of induced breeding depends on proper gonadal maturation because fishes reared without adequate food supply do not show full maturity. Also, the breeding of females and males do not synchronize under improper rearing conditions. Dietary manipulations as well as hormonal biotechnology have resulted in the advancement of maturity in the Indian carps and catfish by 2 months under pond conditions giving scope for re-maturation and multiple breeding of the same fish even in subtropical region of the country for better gamete output. Modern fish industry is highly specialized exploring more and more possibilities to manipulate reproduction. With all the recent advances in the reproductive physiology, we are still far behind to understand the basic mechanisms involved in the process of fish propagation in nature. The knowledge on nutrition and reproductive endocrinology periodically refines the technology of production of quality gametes for the expansion of aquaculture. Altering sexual cycles, induction of advanced and delayed maturation, ovulation and spermiation and artificial fertilization are to be practiced where nutritive and reproductive physiology might help for faster progress in aquaculture.

Biography

A K Pandey has completed his PhD (Zoology, Comparative Endocrinology) from the University of Gorakhpur in 1990. He is currently the Principal Scientist at National Bureau of Fish Genetic Resources (ICAR), India. He has published 248 research papers in journals of repute. Most of his papers are widely cited by eminent scientists of the world. He is also the Editorial Board Member of a number of national journals.

akpandey.ars@gmail.com

Notes: