

ABSTRACT

The pattern of oocyte development was investigated in female *Catla catla* (a Pakistani major carp) and correlated with endogenous fluctuations of serum steroid hormones. It allowed defining sexual cycle of *Catla catla*. These detailed studies are first of its types from Pakistan. In November 2006, a group of 500 fish of 18 months age were stocked in a new pond at a commercial fish farm and routine operations were left as such for the study of growth and reproduction in a typical commercial situation. Mid of every month, sampling was done and gross ovarian developmental stages were examined and blood drawn for estimation steroid hormones. The results showed that *Catla catla* spawns once a year. *Catla catla* is heterosexual and ovaries are probably group synchronous. Ovaries are paired structure, joined by short oviduct. Spawning season is short (June to July). The highest GSI was observed in June ($8.93 \pm 5.56\%$) Environmental factors especially photoperiod, temperature and rainfall act as cues for spawning. Eight developmental stages of oogenesis were observed in *Catla catla* (oogonia, chromatin-nuclear stage, perinucleolus stage, cortical alveoli stage, oil droplet stage, early yolk globule stage, late yolk globule stage, germinal vesicle movement stage). No post ovulatory follicle was seen. Atretic follicle at primary, secondary and tertiary oocyte stages were observed. In August, September and October atretic follicle were more in number.

The levels of 17α -hydroxyprogesterone, testosterone, 17β -estradiol, 11-ketotestosterone and cortisol were measured in serum from the age of 18-29 months using ELISA method. The value of 17α -hydroxyprogesterone was minimum in May (0.18 ± 0.03 ng/ml) and maximum in November (0.95 ± 0.01 ng/ml). Testosterone level was minimum in November (0.005 ± 0.004 ng/ml) and maximum in May (0.63 ± 0.06 ng/ml). Value of 17β -estradiol was ranged from 0.04-0.14 ng/ml, displaying minimum and maximum value in November and June respectively. 11-ketotestosterone also displayed maximum values in May (5.9 ng/ml). Cortisol ranged from 350 to 588 ng/ml.

Growth of oocytes appears to be triggered by increasing photoperiod and temperature and later hormonally. Since this is the first endeavour from Pakistan, results are discussed in the light of available literature and in comparison with the published work on this species from Indian Territory.