

CAPTIVE BREEDING OF ASIAN CATFISH, *Clarias batrachus* BY OVATIDE IN MARATHWADA REGION**H. S. JAGTAP^{a1} AND S. S. KULKARNI^b**^{ab}Department of Zoology, Shri Shivaji College, Parbhani, Maharashtra, India**ABSTRACT**

In the present study attempts were made to evaluate the role of ovatide on captive breeding of Magur, *Clarias batrachus* in laboratory condition. Different doses of ovatide were tried on male and female fish, the optimum response was showed at dose 0.6 ml/kg body weight of female. The brooders weight range 150-300 g were used. Breeding response studied under different parameters and showed latency period (h), fecundity, fertilization and hatching (%), 14±1.2, 7000±450, 80±5.3 and 70 ± 4.5 respectively. Values are significant at (p<0.05). The present study findings indicated that ovatide @ 0.6 ml/kg body of female showed maximum spawning response in *Clarias batrachus*.

KEYWORDS : Spawning, Marathwada, Ovatide, *Clarias batrachus*, Fertilization.

The Asian catfish, *Clarias batrachus* popularly known as Magur is highly popular in India as an expensive table fish. This species of fish is an excellent diet source in case of patients because of easily digestible high grade protein, high concentration iron and beneficial lipid content.

The population of *Clarias batrachus* species is declining day by day due to drying up of wetlands, use of pesticides in the paddy field, loss of habitat and overfishing particularly in Marathwada region (Jagtap and Kulkarni; 2013). Due to non-availability of quantity and quality seeds from wild and natural source and also scarcity of matured brood fish which is the major constraint in the culture of this species in a large scale level in this region. To overcome this problem seed production and culture as well in pond environment through induced breeding.

The use of synthetic inducing agents for successful ovulation followed by stripping in catfish is a common practice and has been studied at several occasions (Manickam and Joy; 1989).

However, the commercially available synthetic inducing hormones in readymade form containing GnRH and dopamine blocker receptor (Ovaprim, Ovopel, Dagin and Aquaspawn) are becoming very popular and found to be efficient in successful spawning of fishes (Nandeeshha et al., 1990). Ovatide, an injectable inducing hormone consisting of GnRH analogue in combination with dopamine antagonist, is also efficient in induced spawning (Sahoo et al., 2004).

The aim of the present study was to test the effectiveness of different doses of Ovatide in induced spawning of *Clarias batrachus* in Marathwada region.

MATERIALS AND METHODS

The induced breeding experiments were carried out in the department laboratory. Brooders were collected from local fish market, prior to the breeding season or during the breeding season. The brooders were acclimatized in the laboratory condition. They were fed at 2% body weight daily with chicken, meat and artificially made pellets. The males were selected on the basis of pointed and reddish genital papilla, while females by a round and reddish papilla, softness of abdomen and uniform size of intra-ovarian oocytes (Sharma et al., 2010).

The female brooders of 250-300 g weight range were selected for induced breeding. Ovatide (Manufactured by Hemmo Pharma, Mumbai, Maharashtra, India) was used as hormone for induced breeding of fish. Different doses of ovatide viz. 0.4, 0.5 and 0.6 ml for female and male 0.2, 0.3 and 0.4 ml per kg body weight were tried. Dose was administered intramuscularly for both male and female, at the base of caudal fin and above the lateral line. Injected brooders were released in spawning tank one female and one male in each tank. For each dose three replicates were used. The control fish were injected with saline solution. The water parameters like temperature, pH, dissolved oxygen and total alkalinity were monitored following the standard methods (APHA, 2000).

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Before injection, individual female and male body weight was recorded. The testes were removed from male fish, incised and squeezed to get sperm. The sperms were pooled and diluted with physiological saline to prepare a sperm suspension. Before stripping, individual weight of females was recorded. At the end of the desired latency period the females were stripped individually into dry enamel tray. The translucent eggs containing embryonic eyes were considered fertilised. Unfertilized eggs were removed immediately from the tray to avoid the fouling of water. Student's t test were used for statistical analysis.

Flow-Through System for Incubation of Eggs

The flow-through system, developed in this laboratory comprises a stand on which is placed a row of plastic tubs (12 cm dia, 6 cm high). Water supply is provided from an overhead tank through a common pipe to all the tubs with individual control taps. Each tub is provided with an outlet at a height of about 4 cm which drains into a common conduit to drain off the water. Aeration supplied to each hatching tub. The fertilized eggs are uniformly distributed in the plastic tubs and a feeble current of water is provided to maintain good water quality. The hatchlings are transferred to plastic containers (capacity 200 L) for rearing.

RESULTS AND DISCUSSION

Water parameters like temperature, pH, dissolved oxygen and total alkalinity were in the ranges of 26-29°C, 7-9, 6.5-7.5 mg/l and 310-340 mg/l respectively during this study.

The spawning response of *Clarias batrachus* at different ovatide doses is presented in Table 1.

The stripping response at 0.6 ml/kg body weight dose was significant, followed by 0.5 and 0.4 ml/kg body

weight ovatide dose. The latency period was 14±1.2 h. Fecundity 7000±450, fertilization rate (80±5.3%) and hatching (70 ± 4.5 %) (p<0.05) were recorded during this study. The eggs hatched out within 12 to 18 h and yolk sac was absorbed in 4 days. In case of male 0.4 ml/kg body weight showed optimum response. No spawning occurred in control groups (Table 1).

Dose 0.4 ml of ovatide per kg body weight resulted in lowest stripped egg yield. The results indicated that the suboptimal dose of 0.4 ml/kg body weight ovatide was not sufficient for complete ovulation which might be due to insufficient release of gonadotropin (Billard et al., 1984). Zonneveld et al., (1988) has the opinion that the stripping response decreased at lower dose of pituitary in *Clarias batrachus*. Sharma et al., (2010) studied the effect of different doses of ovatide on the breeding performance of *Clarias batrachus* he found that 1 mL of ovatide per kg body weight of female brood fish was optimum.

The lowest fertilization at 0.4 ml/kg body weight dose might be due to asynchrony between maturation and ovulation, lead to low hatching and this was in agreement with the report of Rowland, (1988). The good quality eggs were obtained when ovatide 0.6ml/kg body weight of fish was injected to this species. More deformity in larvae at lower or higher dose may be attributed to the fertilization of unripe or over ripe ova. Lam et al., (1978) noted that over ripe eggs did not form a perivitelline space when placed into fresh water, suggesting that there had been a change in the permeability of the chorion. Consequently reduced permeability of the chorion to water may adversely affect utilization of the yolk, leading to retarded (Smith, 1957) or abnormal embryonic development in the over ripe eggs. The higher response in 0.6 ml/kg body weight dose level might be due to proper ovulation of eggs. The lower responses at

Table 1. Response of Ovate on Induced breeding of Magur, *Clarias batrachus*.

Sr. No.	Weight of female (g)	Weight of male (g)	Dose of female (ml/kg)	Dose of male (ml/kg)	Latency period (h)	Fecundity	Fertilization (%)	Hatching (%)
1	150-250	160-200	Control	Control	Nil	Nil	Nil	Nil
2	175-300	200-260	0.4	0.2	14±1.2	3700±245	55±3.2	60 ± 2.1
3	200-250	150-225	0.5	0.3	15±1.5	4500±350	70±1.3	65 ± 3.3
4	250-300	200-250	0.6	0.4	14±1.2	7000±450	80±5.3	70 ± 4.5

Control group injected with saline solution. Values are Mean±S.E. of three replicates significant at (p<0.05).

0.4 and 0.5 ml/kg dose might be due to ovulation failure or blocking of ovipore by disintegrated ovarian tissue and egg bunches.

It is concluded that in *Clarias batrachus* the optimum dose of ovatide for induced breeding in present condition is 0.6 ml/kg body weight for female and 0.4 ml/kg body weight for male in the present work.

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