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Effect of Ovaprim Hormone (Syndel Laboratory, Canada) on Spawning of Koi Carp at Fish Hatchery Chilya Thatta, Sindh, Pakistan

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Abstract: The present study was conducted to observe the effect of intraperitonial injection of ovaprim hormone (syndel laboratory, Canada) on spawning of koi carp in cemented tanks at Fish Hatchery Chillya Thatta, Pakistan. The experiment was performed during 27th February 2013 to 25th March 2013 in which, 12 male & 06 female were selected from the brood ponds, average body weight of female was 536.7±6 g and male 579±8 g respectively, brood fish were injected with single dose 0.2 ml/kg for male and 0.5 ml/kg for female then released into spawning cemented tanks size (3x6x5 ft) with aquatic macrophytes (*Hydrilla verticillata*) for attachment and development due to adhesive nature of eggs. The ovulation rates, fertilization rate and hatching rate were 100%, 75.2%, and 83.3% respectively. The spawning response was good. Relative fecundity was estimated at 9930 eggs/kg. The result of this study clearly indicate the suitability of ovaprim for inducing breeding of Koi carp.

Keywords: koi carp, Induced spawning, ova prim, hormone, fecundity, Hatchlings.

1. INTRODUCTION

Ovaprim hormone is used commonly for breeding through artificial technique in fishes (Marte *et al.* 1987). It has a salmon gonadotropin-releasing hormone equivalent and a dopamine antagonist, ova prim shows effective in plentiful finfish species in the decided scientific literature. Ornamental fish rearing is becoming a necessity from luxury (Manik and avelu *et.al*. 2009). Koi carp grew up to 100 cm in total length with an elongated body determining 3 to 4 times less in depth than total length. In their natural habitat, koi carp live up to 5-24 years (Kuroki, 98). This specie exhibits external fertilization, with spawning frequency that varies throughout their range (Balon, 1990) and are considered as batch spawners (Kalilola et *al.*, 1993).

The culture of koi carp is still not well-known in Pakistan because of insufficiency of good quality seed and also insufficient knowledge on their culture and breeding methods. Presently, no published information is available on the effectiveness of ovaprim hormone on spawning in commercially important fish, koi carp from Pakistan. Therefore present experiment was conducted to observe the effectiveness of ovaprim hormone on stimulation, ovulation of koi carp in captivity, As Koi carp is standard ornamental fish enjoying constant support among ornamental fish lovers (Manik and avelu *et al*., 2009). Due to this present study were conducted to observe the effect of Ovaprim hormone on spawning, egg fertilization and survival of hatchlings of in cemented tanks at the environment of fish hatchery Chilya Thatta Sindh Pakistan.

2. MATERIAL AND METHOD

The experiment was conducted at Fish Hatchery Chilya Thatta, Sindh, Pakistan during the months of February to March 2013. Eighteen specimens of Koi Carp were used for spawning, having weight female 536.7±6g and male was 579±8g. The experiment was conducted in cemented rectangular tanks (3x6x5) and circular incubation tanks with 1m in a diameter, aquatic macrophytes (*Hydrilla verticillata*) were putted into the breeding tank due the adhesive nature of eggs. Brooders were selected by sexual and were collected from brood pond of Fish Hatchery. Sex ratio of brooders was kept at 2:1 for male and female. Selected brood fishes were placed in rectangular tanks for hour used for conditioning. At evening 4:00 pm, the koi carp fish were injected with ovaprim (syndel laboratory, Canada) hormone 0.5 ml/kg female and 0.2ml/kg male of at base of anal fin intraperitonial region and released into tank of size 3x6x5 ft shows in **(Table , 1)** for spawning with continue water flow through system.

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Table 1. Doses of ovaprim used in the induced breeding of male and female Koi carp at Fish Hatchery Chilya Thatta.

S. No	Sex	Body Weight (g)	Dose of ovaprim Hormone (ml/kg)
1.	Female	450	0.3.1
2.	Female	650	0.4.3
3.	Female	500	0.3.2
4.	Female	400	0.3
5.	Female	700	0.4.5
6.	Female	520	0.3.1
7.	Male	550	0.1
8.	Male	650	0.1.5
9.	Male	700	0.1.8
10.	Male	400	0.1
11.	Male	470	0.1
12.	Male	580	0.1.1
13.	Male	600	0.1.4
14.	Male	590	0.1.2
15.	Male	640	0.1.1
16.	Male	620	0.1.1
17.	Male	540	0.1
18.	Male	610	0.1

Spawning behavior was observed as the male started chasing the females after 2 hrs. Spawning Activity Started after 2-3 hrs. The mating processes took place on grass in breeding tank, males made advancement towards the females. Males monitored the females touching it frequently a unique behavior was noticed in males for attracting to female for mating by surrounding the female in order to retain her in a given area. The dorsal fin exposed frequently during mating above the water surface and there was much splashing of water and chasing from one area to another. During spawning the males were associated on either side of the female and rubbed their body against the female and released the milt. The sticky eggs were dropped on underwater plants and were fertilized externally. After finishing breeding process female down her head, breathing deeply. As the breeding process completed both male and female remained quiet in one corner of the tank and did not show any signs of anger. Fertilized eggs were collected very carefully and were shifted into incubatory tanks for further development provided with well-aerated water. Eggs hatched out in 3-5 days and hatchlings were separated from grass with intensive care to minimize the seed mortality chances. After egg yolk absorption artificial feed was given three times a day.

3. RESULTS

Minimum and maximum values of fecundity, fertilization and hatchlings of Koi carp after the intraperitonial injection of ovaprim hormone (syndel laboratory. Canada) are shown in Table 2. Brood fish injected with single dose of Ovaprim was successfully induced to spawn. Six (06) females and twelve male were injected intraperitonial with ovaprim. Spawning response of female Koi carp is given in Table 2. Ovulation of fish was 100%. Average no. of eggs/kg, Average no of fertilized eggs/kg and Average no of hatchlings/kg was 9930, 74534 and 622 respectively. Fertilization and hatchling % was 75.2 and 83.3%, respectively **(Table 2).**

Table 2. Effect of Ovaprim hormone on spawning of koi carp at Fish Hatchery Chilya Thatta.

Parameter	Ovaprim treatment
No. of females treated	06
Total weight of females	3.22 kg
Total no. of eggs	39200
Total no. of fertilized eggs	240000
Total no. of hatchling	200000
fertilization percentage	75.2%
hatching percentage	83.3%
Average no. of eggs/kg	9930
Average no. of fertilized eggs/kg	74534
Average no. of hatching/kg	622

During the study period recorded water quality parameters such as temperature, dissolved oxygen, Hardness, Ammonia and pH did not show far of variation. The temperature was 20 to 24 °C. The pH 7.2 to 7.6, dissolved oxygen 5.4 to 5.8 ml/L. Hardness 85 to 90 ppm and Ammonia never exceed from 0.02 mg/L. Due to continuous water flow the deficiency impact of these parameters did not seem to have a prominent effect **(Table 3).**

Table 3. Water quality parameters during induced breeding of Koi carp at Fish Hatchery Chilya Thatta.

S. No	Parameters	Range
1	Water pH	7.2-7.6 mg/L
2	Water temperature	20-24°C
3	Hardness of water	85-90 ppm
4	Dissolve Oxygen (DO)	5.4-5.8 ml/L
5	Ammonia	0.02 mg/L

4. DISCUSSION

In the current study, single dose of ovaprim hormone (syndel laboratories, Canada) on intraperitonial side, caused in successful breeding of koi carp. These results of stimulation with ovaprim hormone of the current work are matched with (Jamroz *et al.,* 2008). The successful use of Ovaprim hormone in artificial ovulation in common carp fishes is well accepted (Pandey and Singh 997; Mijkherjee *et al.*, 2002; Sharma and Singh, 2002; Szabó, 2003; Sarkar *et al.,* 2004). Generally, fish response with Ovaprim was well found by considering the ratio of successful breeding, fecundity, fertilization rate and hatching rate. In carp fishes ovaprim hormone solve many problems in carp seed production. Ovaprim not helpful to minimize

mortalities in breeding but also take less time and brood fish will be handled only one time (Nandeesha *et al.*, 1990b; Das, 2004; Naeem *et al.*, 2005a & b). In the current study conducted on the Ovaprim was indicated that this hormone had no side effect on fish brooders. Many authors have published on fecundity and successful induction of breeding of carp fishes with Ovaprim in Pakistan on various species such as *Labeo rohita* and *Cirrhinus mirigala* (Khan *et al.*, 1992); *Aristichthys nobilis* (Naeem & Salam, 2005); *Catla catla* (Naeem *et al.*, 2005a); *Hypophthalmichthys molitrix* (Naeem *et al*,. 2005b). Koi Carp ovulation in our study was obtained with a dose of 0.5 ml/kg, which was found to be the good dose for spawning induction in this species because all the fish injected with a dose less than 0.5 ml/kg of Ovaprim will not give best results. The 0.5 ml/kg does is same than those generally recommended by the distributors and used for cyprinids. In the present study ovulation, fertilization and hatching values were found 100%, 75.2% and 83.3%, respectively. However, in a previous work conducted by Naeem with coworkers in 2005b at fish hatchery Islamabad, Pakistan, reported corresponding values as 100%, 72.56% and 71.09% for silver carp (*Hypophthalmichthys molitrix)*, respectively, the differences in results was due to climatically or environmental changes. The fecundity is higher from pervious results of (Naeem *et al.*, 2005b; Ling, 1980 and Fermin *et al.*, 1989), these differences may be due to topographical and climatically changes and best dietary prominence of brood fish. More studies are required to observe the effect of ovaprim hormone on the growth and body composition of hatchlings produced in different environmental conditions. In conclusion, dose of Ovaprim hormone for koi carp female brood fish is 0.5ml and males respond at 0.2 ml/kg and have no adverse effect on brood fish. Regression analysis shows the comparison between Wet Weight, No. of Eggs in koi carp and show body weight had a positive influence on absolute fecundity (**Fig.1).**

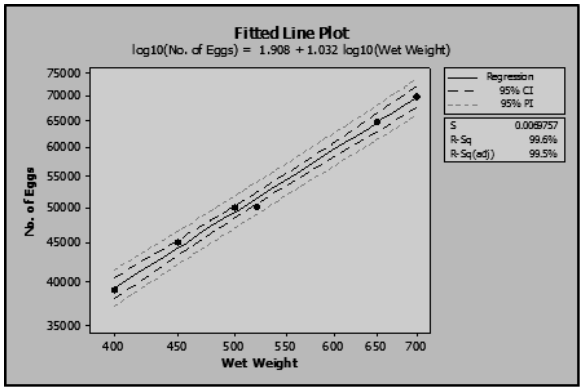

Fig.1 . Regression analysis shows the comparison between Wet Weight, No. of Eggs in koi carp

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