Breeding of Gold Fish, *Carassius auratus* Using Wova-FH

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**Abstract:** Ornamental fish rearing is becoming a necessity for luxury. Ornamental fishes are assuming importance in recent days as stress removers. Among these, gold fish and koi carp are the standard ornamental fishes enjoying constant support among ornamental fish lovers. The rearing of these fishes has been standardized over centuries. But breeding still remains to be a technique familiar only to breeders. Breeding with hormones is a common practice among edible fishes. Considering the demand and need to produce these ornamental fishes at specified period and place, research in induced breeding merits due importance. Use of synthetic hormone WOVA-FH, in induced breeding of gold fish has been studied for a period of 75 days. The study reveals that the hormone induction at the rate of 0.1ml per gold fish of 25g yielded a potential fry stock of (1501±158), percentage of hatchlings (60.99%) and percentage of survival (72.56%) is high, when compare to the non-induced ovulated fishes. At preliminary level this study portends ease of breeding of fishes at farmer’s choice, in spite of the need for further inquest.

**Key words:** Gold Fish- *Carassius auratus* · Wova-FH

**INTRODUCTION**

Ornamental fish rearing is becoming a necessity from luxury. Breeding of these fish is still remains to be a technique familiar only to breeders. Breeding with hormones is a common practice among edible fishes. Considering the demand and need to produce these ornamental fishes at specified period and place, induced breeding merits due research. Ovaprim though claimed to yield good performance in breeding [1]. The family Cyprinidae, which includes 2010 species classified in 210 genera, is one of the most important groups of freshwater fish found in North America, Africa and Eurasia. For sustainable cyprinidae fish production, both from the point of view of conservation programmes [2] or aquaculture production [3], The success of induced breeding operation depends upon proper selection of brood fish particularly female. Fish seed is the critical and basic input for successful fish culture operations. However, the major problem in the carp culture is the non-availability of quality fish seed and timely seed supply has Ovaprim-C, reduces handling due to single injection, and maturation of gametes immediately after injection for fast result [5]. The present study aims to induce the goldfish breeding with the help of Wova-FH and compared to naturally breeding fishes.

**MATERIALS AND METHODS**

**Collection of Experimental Fishes:** The Gold fish (*Carassius auratus*) was purchased from Raja Aqua farm, Virudhunagar, Tamil Nadu. These fishes were transported to the ornamental fish culture unit, Department of Zoology, A.N.J.A. College, Sivakasi. The fishes were transferred to separate plastic fiber tanks (300 liter), each filled with dechlorinated tap water (29.0±1oC, pH= 7.5±0.5) and acclimated for 20 days. During this period, fed with commercial feed. The water was changed on alternative days and maintained the aeration. The same aged gold fish weighing around 25 g have been selected for the study. The males and females have been maintained separately and fed with Zooplankton.
Table 1: Fecundity, hatching and survival rate of gold fish, Carassius auratus using Wova-FH - a comparative study at different periods of breeding

<table>
<thead>
<tr>
<th>Day of Breeding</th>
<th>Non-Induced Ovulation</th>
<th>Induced Ovulation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No. of Eggs Production (No.)</td>
<td>Hatchling (%)</td>
</tr>
<tr>
<td>20&lt;sup&gt;th&lt;/sup&gt;</td>
<td>1046±138&lt;sup&gt;a&lt;/sup&gt;</td>
<td>53.53&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
<tr>
<td>40&lt;sup&gt;th&lt;/sup&gt;</td>
<td>908±96&lt;sup&gt;b&lt;/sup&gt;</td>
<td>56.16&lt;sup&gt;c&lt;/sup&gt;</td>
</tr>
<tr>
<td>60&lt;sup&gt;th&lt;/sup&gt;</td>
<td>955±125&lt;sup&gt;c&lt;/sup&gt;</td>
<td>51.80&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>Overall production</td>
<td>970±120</td>
<td>53.83</td>
</tr>
</tbody>
</table>

Experimental Design: At the day of breeding during evening hours around 5° Clock, Mature male and female gold fishes were collected and injected with 0.1 ml of WOVA-FH at caudal region and released into plastic fibre tank size 1m x 1m x 0.5m. The mosquito net was placed inside the plastic fibre tank. The sex ratio was maintained @ two males for one female. These type of experiment was repeated each 20 days interval. Totally the experiment was carried out 60 days.

Fish Feed: The common ingredients like wheat flour, soya flour, fish meal and spirulina were mixed in the ratio of 4:3:2:1. The mixture was sterilized in a cooker and cooled. The cooled mixture was added with a multivitamin tablet. It is then passed through sieve and air dried.

Counting of Total Eggs: The eggs were collected in a bucket and were put in a mosquito net held in water. The numbers of eggs were measured in a beaker of known volume. Total numbers of eggs laid (approximately) can easily the calculated by the following formula.

Percentage of Hatching: Percentage of hatchling was calculated by following formula

\[
\text{Hatching} = \frac{\text{Total no. of spawn}}{\text{Total no of fertilized Eggs}} \times 100
\]

RESULTS AND DISCUSSION

The temperature, dissolved oxygen and pH observed during the study period have not shown much of variation among the tanks. The temperature at the time of breeding was 27.6°C and shown a range of variation from 27.5 to 29.1°C. The pH of different tanks fluctuated from 7.2 to 7.4. The dissolved oxygen estimated has shown a range of variation from 5.3 to 5.7 ml/l. Due to aeration by shower arrangements, the deficiency impact of this parameter did not seem to have a pronounced effect. A good chasing behaviour was observed in all the sets. The number of eggs released and fertilized was comparatively higher than the control in gold fish. Indeed, this is a qualitative estimate, since the eggs have been sporadically scattered and seen all through the tank, hapa and plants sticking here and there. A quantitative estimate of hatchlings could be made on fifth day. The Table 1 categorically illustrates the number of hatchlings and survival up to 16th day in all the treatments. The commercial breeders are breeding the fishes without hormonal induction, claiming success. Nevertheless this study proves that their efforts could be more meaningful by utilizing the full breeding potential of the animal. The estimated number of hatchlings in the tanks has vouched for this superior performance of hormone induced breeding in both the cases. Taking the economic considerations into account the hormone administration appears to be costlier [6]. The dosage has been fixed arbitrarily on the higher side, depending upon the fish’s acceptance of undiluted hormonal preparation on body weight basis. Capitalizing the demand and the ease of using this hormone in producing desirable results, this study merits further extensions for optimization especially in terms of dosage. The prostaglandin’s regulative impact on release of GnRhl warrants in depth mechanism. This would help in reducing the cost by using lesser quantity of hormone befitting the demand [7]. Further comparative study using synchromate and ovaprim under synchronous conditions would throw more light on economic considerations in variant empirical situations.

REFERENCES


