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Effect of natrum muriaticum on fecundity in goldfish, *Carassius auratus*

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Abstract

The present study was aimed to perform induced breeding & to observe the fecundity of gold fish (*Carassius auratus*) by administering Natrum muriaticum of 30 centesimal potency in female fishes by intramuscular injection at different dosage level. Spawning was observed within 24 hrs of injection. Number of eggs released was higher at 0.1ml dosage compared to other doses.

Key words : Gold fish, Natrum muriaticum, Induced Breeding, 30 Centesimal Potency, Fecundity.

INTRODUCTION

Ornamental fishes are often called as 'living jewels' due to their colour, shape, behavior & origin. They are peaceful, generally tiny, available in attractive colours & capable of living in confined spaces. During the last four decades, there has been considerable growth & diversification in the international trade in ornamental fishes which is valued at about US $ 5 billion. Considering the relatively simple techniques involved, this activity has the potential to create substantial employment opportunities, besides earning foreign exchange [1]. Induced breeding is a technique by which ripe fish breed in confined water when stimulated by an agent. A common method used for induced breeding in fish is the administration of pituitary extract from a mammal of fish. A number of new generation drugs are now available as alterative to the pituitary extract [2]. Reports are there to show that Natrum muriaticum can be used to induce breeding in fish [3]. The present study is aimed to find out the effect of Natrum muriaticum on the number of eggs produced by *Carassius auratus*.

MATERIALS AND METHODS

Experimental Animal: The goldfish (*Carassius auratus)* is a freshwater fish . It was one of the earliest fish to be domesticated, and is one of the most commonly kept aquarium fish [4].

Collection & Maintenance: *Carassius auratus* (gold fish) were collected from Trichy Golden Aquarium. Healthy female fishes approximately ranging from 6 cm in length were sorted out. Totally eight female goldfishes were chosen for the present study. The fishes were housed in four troughs each containing two fishes.

They were maintained under normal conditions of temperature & light so that they may get acclimatized to the prevailing laboratory condition. These fishes were fed with artificial fish feed 'Kijaro basic'. The water was changed at 8 am & 4 pm and the feeding was carried out at the same time. The period of acclimatization was about 10 days prior to the commencement of the experiment.

Experimental Protocol: Natrum Muriaticum 30 centesimal potency was brought from "Trichy Homeo Medicals". The above mentioned dilutions were preferred as they are the typical potency with peculiar potenizing effect.

C.auratus measuring up to a length of 6cm approximately was selected for observation. The weight of the female fishes used in the study fluctuated from 4-5 grams. Totally eight fishes were selected for the study. Among the eight fishes two was considered as control & the other six were treated as experimental. The experimental fishes were injected intramuscularly 0.1, 0.2 and 0.3 ml of N.muriaticum respectively using 1 ml insulin syringe. Each dose was given to two fishes. Spawning time & number of eggs produced was observed.

RESULTS

The present study describes the effect of N.muriaticum at different doses level on *C.auratus*. It was observed that fecundity varied with different doses of N.muriaticum. The highest and lowest number of eggs was 35 and 90 obtained at a dose of 0.3ml and 0.1ml of body weight. The data on the egg released by the treated fishes are presented in Table 1 and figure 1.

The fish that were injected with 0.2ml and 0.3ml released eggs after 24 hours and the eggs were not released until pressure was applied to the stomach. Female fishes injected with 0.1ml of N.muriaticum released eggs within 24 hours of injection. Eggs oozed out directly before any form of pressure were applied to the stomach.

Fish injected with 0.3ml of N.muriaticum had ripened eggs but fecundity was less. The total number of eggs was 35-40 eggs as shown in Table 1.*C.auratus* injected with 0.1ml the highest fecundity was obtained with eggs oozing out of the stomach freely. The total number of eggs were 80-90(table 1).There was a statistical significant difference ($P<0.05$) in the mean number of eggs with different doses of N.muriaticum.

DISCUSSION

Natrum muriaticum successfully induced spawning in *C.auratus.* The dosage administered influenced the fecundity of fish. The result is consistent with the observation of [5]. Koi carp and goldfish were induced to spawn by administrating ovaprim. Induced breeding was attempted by intraperitonial injections of ovaprim at a dosage of 0.3ml/kg to goldfish & koi carp. The spawning rate was 90% & 80% respectively. Similar results were obtained in Angel fish *Pterophyllum scalare* using ovaprim of 0.35/kg of body weight and fecundity obtained was 665.66 eggs [6]. Induced spawning of African mudfish *Clarius garipinus* at a

Table 1 : Number of eggs produced with 0.1, 0.2ml and 0.3ml of Natrum muriaticum

Dosage	Number of fish	Number of egg released	Mean	S.D
0.1 ml	2	80-90	85	7.07
0.2 ml	2	42-50	46	5.65
0.3 ml	2	35-40	37.5	3.53

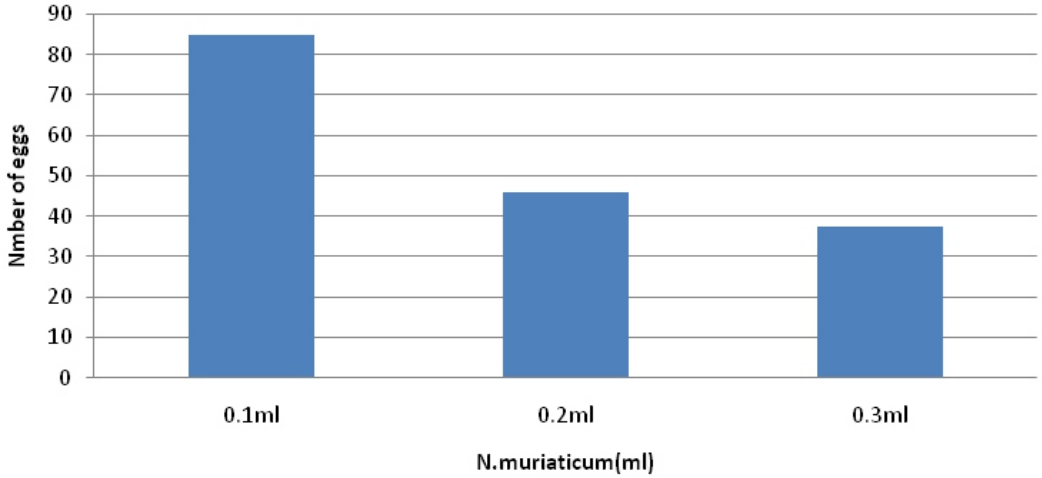

Fig. 1 Number of eggs on different doses of N.muriaticum in *C.auratus*

dosage of 1.5ml/kg of ovaprim enhanced the production of more eggs and highest number of eggs range i.e 300,000-350,000[7]. *Ompok bimaculatus* induced to spawn by an intramuscular injection of ovaprim dosage 0.5 ml/kg. Spawning was observed 5-6 hours of injection, an average of 4012 eggs were spawned by each female [8].

In the present study Natrum muriaticum 30 centesimal potency has advanced the spawning within 24 hours in *C.auratus*. The control fishes did not release any eggs. Similar results are reported by [3] in goldfish. Injection of Natrum muriaticum 1000 centesimal potency into the goldfish (1ml/kg) induced spawning within 22 hours against 5 days in the control. The result is consistent with the observation of [9] that injection of ovaprim 0.6ml/kg for female fish spawned successfully within 18-32 hours of injection. In comet goldfish spawning was observed six hours after the injection of 0.5ml/kg of ovaprim [10].

C.auratus injected with 0.1ml/kg the highest fecundity was obtained when compared to other doses. The lower in dosage resulted in more eggs being produced, similar results were obtained in goldfish at the rate of 0.1ml per goldfish of 25 g yielded a potential fry stock of 1600[11].

CONCLUSION

Results of this study have shown that treatment of *C.auratus* with Natrum muriaticum injected in a 0.1 ml enhanced the production of eggs in *C.auratus*. The cost and effectiveness of natrum muriaticum is cheaper compared to other drugs. It shows that natural product like natrum muriaticum can be used in the mass production of commercially important ornamental fishes.

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