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Research Article

Induced spawning of rosy barb *Puntius conchonius* by Natrum muriaticum

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ABSTRACT

Experiments were conducted on females of *Puntius conchonius* by administering Natrum muriaticum of 30 c potency at different dosage level to observe the efficacy of Natrum muriaticum during induced spawning. The results were satisfactory and enhancing as Natrum muriaticum induced spawning in *Puntius conchonius*. The present study suggests that Natrum muriaticum might be considered best suitable for spawning of *Puntius conchonius.*

Key words: *Puntius conchonius,* Induced spawning, Natrum muriaticum 30c potency, Protein estimation,Number of eggs.

INTRODUCTION

Globally there is a steady increase in the ornamental fish trade due to the enhanced popularity. The demand for ornamental fish in the industrialized nations is being met by imports, the volume of which is increasing year by year [1]. The ornamental fish is wealth generated source in the field of aquaculture and it plays a pivotal role in making money [2].In aquaculture industry, ornamental fish have gained great deal of attraction and its demand has increased in recent years. The development of this segment of the aquaculture industry depends on virtually the seed availability in nature as well as in hatchery. Hatchery seeds have many advantages over the wild ones. To induce breeding with hormones, either a gonadotropin or GnRH analogue with or without a dopamine are used [3].

Sincethe first successful attempt of induced breeding of *Cresterdon decemmacultus* by injection of pituitary extract[4], the search for newer and better methods for induction of spawning in teleost fishes has gained momentum. Mammalian gonadotropin (LH, FSH, HCG and PMSG) and adrenocorticosteroids have been used to spawn a variety of fishes and come out with variable results [5].For hatchery production, the pituitary gland,HCG and ovaprim injection have been found effective. The use of oxytocin, synahorin and prolan had little success. Many salts and herbs were suggested from Indian medicines to improve the fertility and reproductive ability of humans. One such homeopathic preparation is Natrummuriaticum[6]but it has not so for been used except by Mitra, S.D and Raizada, S [7]used this preparation to induce ovulation in food fishes *Labeo rohita* and *Cirrhina mrigala.* This preparation was also used to induce breeding goldfish *Carassius auratus*[8].The present investigation was conducted to ascertain the efficacy of natrum muriaticum in *Puntius conchonius.* This work is designed to provide some important baseline information on the use of a natural product for the mass production of commercially important fishes.

MATERIALS AND METHODS

The rosy barb is a very hardy fish and good choice for beginners. They are very active and a delight to watch [9].The female rosy barb is silver colored with a red tinge and the male rosy barb will change from silver to a rich claret flush during the breeding period. Rosy Barbs will scatter their eggs on some form of substrate or simply release them in open water. The female Rosy Barbs can produce hundreds of eggs per spawning [10]. *Puntius conchonius*were

collected from Trichy Aqua pet shop. Sexually mature female fishes approximately ranging from 4-4.5cm in length were sorted out. Totally 10 female fishes were chosen and housed in 5 troughs each containing two. 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 'Day Today's Complete Nutritional Fish Food'. 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.

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. From Natrum muriaticum 30 centesimal potency 0.01%, 0.02%, 0.03% and 0.04% dilution was prepared.0.1ml of Natrum muriaticum 30c potency was diluted to 0.01% by adding 500ml of water. The same way other dilutions were prepared by adding 0.2ml, 0.3ml and 0.4ml of Natrum muriaticum. The medium in which the fishes left were fed with pellet diet at the same time. The experiment was carried out for 4 days (0, 1st, 2nd, 3rd days). Among the ten fishes two was considered as control & the other eight were treated as experimental. The medium was changed every day at 8 am and fed simultaneously. After three days eggs were collected from all the fishes counted and analyzed for protein. The fecundity was observed in terms of the number of eggs in the control and treated groups.Total protein content in the eggs was estimated by the procedure of [11] method.

Table 1
Amount of Protein and Number of eggs at different dilutions of Natrum muriaticum in *Puntius conchonius*

Groups	Dilutions of Natrum muriaticum	Amount of protein (mg %)	Number of eggs (Mean± S.D)	Significance
Control	0	5.29	36.5±4.9	-
Treated	0.02%	7.64	77.5±3.53	P<0.05 S
	0.04%	6.58	62±2.82	P<0.05 S
	0.06%	5.47	48±2.82	P>0.05 N.S
	0.08%	4.82	38.5±2.82	P>0.05 N.S

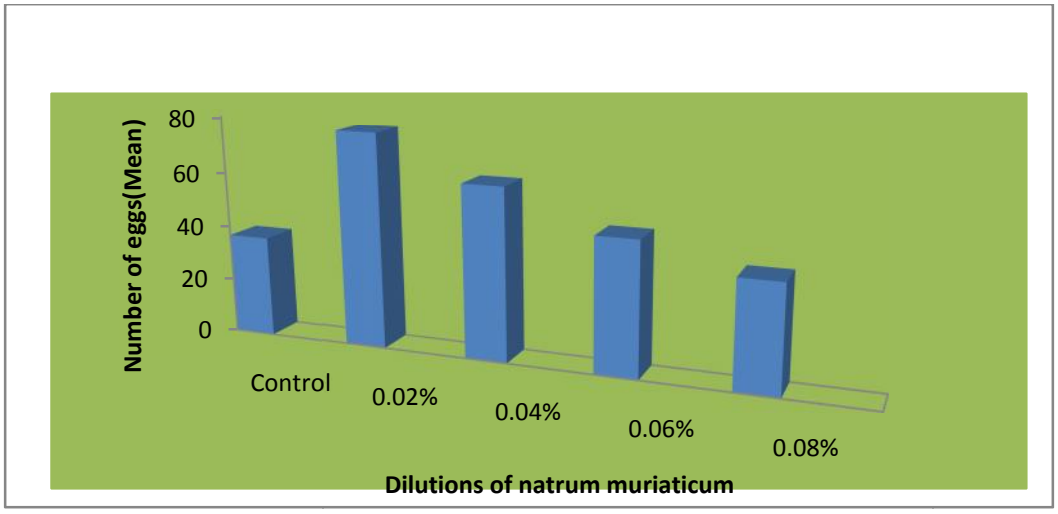

Fig-1
Number of eggs at different dilutions of Natrum muriaticum in *Puntius conchonius*

RESULTS

The present study describes the effect of homeopathic medicine Natrum muriaticum 30 c at different dosage levels on *Puntius conchonius*. It was observed that fecundity varied with different doses of Natrum muriaticum.The highest and lowest number of eggs was77.5±3.53 and 38.5±2.82 obtained at 0.02%and 0.08% by the treated fishes. The data on the amount of protein present in the eggs and number of eggs obtained by the treated and control fishes are represented in table 1 and figure 1.

The protein content in the eggs of control and 0.06% concentration was more or less same. There is an increase in protein content at 0.02% and 0.04% dilutions of treated groups. There was a significant increase ($P<0.05$) in the mean number of eggs of treated group of 0.02% and 0.04% dilutions of N.muriaticum.

DISCUSSION

A study of the biochemical composition of gonads forms an important pre-requisite in understanding the physiology of pre spawning and post-spawning fish, for it is well known that the reserves from various tissues are more and more diverted towards gonads as the spawning time approaches. Generally changes in chemical composition of body have been known to reflect storage or depletion of energy reserves. The values of body composition in fishes vary considerably within and between species, with fish size, sexual condition, feeding, time of the year and activity[12.] Protein is the most abundant dry constituent of many fish eggs [13.]Yolk protein serves two primary function, it provides amino acids for growth and supplies energy via catabolic process [14.]Protein is the dominant raw material in the yolk and the main source for tissue formation[15.]Protein content, which is vital constituent of living cells, tends to vary in stage of maturity of the gonads. Biochemical composition of the fish is subjected to variations depending on the season. In the breeding season, the fish draws up protein from the other organs and is used for the growth and development of the reproductive organs. Fish protein contains all essential amino acids which are easy to digest [16]. Being the most important biochemical constituent of fish, protein levels were analyzed in this study. Natrum muriaticum 30 c of dilution of 0.02% has increased the protein levels in the eggs of *Puntius conchonius*when treated for 3 days. The increase must probably due to the uptake of vitellogenin, the precursor of yolk protein which are taken up by oocytes during maturation[17.] A similar finding is reported by Love [18] who states that vitellogenin which is synthesized by liver in response to estradiol and it is released into the blood and then transported to ovary. Natrum muriaticum is reported to increase the production of red blood cells and albumin, a protein found in animal tissues [19.]This may be the reason for an increase in the level of protein in *Puntius conchonius.*

In the present study Natrum muriaticum 30 c of dilution of 0.02% has induced the rosy barb to produce77.5±3.53 eggs over the control 36.5±4.9ones. Similar finding states that Natrum muriaticum induces a female goldfish to spawn 2856±16 eggs, while the control animal spawned 253±1.8eggs [(8)].An average of 4012±100 eggs were spawned by each female of *Ompok bimaculatus*, intramuscular injection of ovaprim at a dosage of 0.5ml/kg body weight[20]. Use of synthetic hormone Synchromate B, at the rate of 0.1ml per gold fish of 25g yielded a potential fry stock of 1600±604[21].Present findings demonstrate that homeopathic preparation natrum muriaticum is a highly effective stimulus for egg production in rosy barb.

CONCLUSION

Ornamental fish industries have enormous potential in tropical countries. Ornamental fish production is one of most profitable subsector in aquaculture and offer good opportunities for entrepreneurs. To expand the trade new technologies will need to develop in order to breed commercially rare species. The results of the present study will be helpful for the mass-scale production of ornamental fishes.

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