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Induced Breeding of Clarias Lazera Using Hormones of HCG and SGnRHa Neelain University- Khartoum- Sudan

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Abstract: This study used hormones of HCG and SGnRHa to induce breeding of fish Claries lazera, It gave best results in inducing of this fish. Doses of 1000, 1500, 2250, and 2550 IU HCG alone / kg female lazera were 100, 100, 100 and 66.6 % successful. All doses used with males of fishes were not successful.0.3, 0.4 and 0.5 ml SGnRHa per kg female lazera were 62.5 – 87.5 % successful for lazera, in all successful striping trials with female the latency period ranged between 8 – 15 hours. To fertilize stripped eggs semen obtained from two sacrificed males (two from each species) was used successfully to fertilize eggs stripped from one fish of the same species. Fertilized eggs were reared in Neelain University Farm Hatchery. Hatching of eggs occurred after 24 - 48 hours at 25 - 33C°. Survival, counts were carried 5 days after incubation. Survival of hatched larvae ranged between 1 and 60 %.
Keywords: Claries lazera, Hatchery, SGnRHa, breeding

INTRODUCTION

Induction of spawning using hormones provides a direct control over the final stages of the reproduction cycle in teleosts. Artificial spawning of fish has been used for almost 60 years. Surprisingly, the same procedures, with only minor modifications, have been used to spawn an entire range of fish from the ancient sturgeon and paddale fish to, carp, cat fish, salmon, sea bass, red fish, shook and mullet [1]. Induced spawning is sometimes used for fish which ovulate naturally in ponds but males and females do not reach gamete maturation stage at the same time. In this condition use of hormones for male and female cause the fish to release gametes at the same time [2]. Hormonal induction has been the subject of many recent reviews [3-6]. The physiological mechanisms involved in the final stage of oocyte maturation, ovulation and egg release have been thoroughly reviewed [7]. In Africa induced breeding started after the Second World War. The first successful production of fingerlings was that of Clarias garepinus (Chellcher in Ivory Coast and [8] in Egypt). In Sudan some trials to induce grass carp to breed by hormones were carried out between 1984 and 1985 *at el*. shaggara Fish Farm (Fisheries Research Center) but did not give good results [9]. Clarias lazera of the family Claridae is generally considered to be one of the most important tropical cat fish species for aqua culture. It could be produced in form of high quality cheap product. As an aquaculture species, it has a short production cycle with a low production cost. It can be raised in tanks, ponds, or any small water bodies and could be used successfully as a predator to control over reproduction of Nile tilapia cultured in pond. Labeo niloticus (dabs) is another important fish species selected for the present study. It is ranged as a second class fish together with the popular and widely cultured Nile tilapia. It has a good potential for aquaculture as it is locally available, feed on low food chain (plant material) with a good consumer acceptance. It could be marketed as a whole fish and in the form of fish fillets.

Objectives of this study are

- To determine the effect of different concentration of two hormones (HCG and SGnRHa) on fish eggs release.
- To obtain optimum of dose in two hormones HCGand SGnRHa.

Measured, 1ml sterile water was injected in each of the vials, containing the powdered HCG (5000, 4500, 3000, 0r 1000 IU). Each vial was then shaken to dissolve the hormone. The 1ml clear liquid was then withdrawn from vial by a siring and injected in the fish. In the present study the 4 concentrations of HCG of (5000, 4500, 3000, 1000 IU) were used separately for injecting individual fish.0.3, 0.4, and 0.5 ml of the hormon **SGnRHa** e / kg fish weight were used separately for injecting individual fish. The hormone

was prepared for the injection.0.2 ml of SGnRHa was withdrawn from siring, while still containing the hormone, 0.8 ml of physiological salt solution were also withdrawn by the siring. The hormone is now ready. The same siring was used for injecting the fish. The other doses (0.3, 0.4, 0.5 ml) were also treated similarly. Each dose needs four time its volume physiological salt solution. Body weight, body length, doses, hatching, ovulation, temperature and survival were measured. Data of study are analyzed by one way (ANOVA)

RESULTS

The best dose of SGnRHa was o.5ml (1 ml containing 100 mg SGnRHa) / kg fish (Table (1). It gave 87.5% successful stripping of females after 11 hours from injection, at temperature 28 C^o. At concentrations of 0.4 and 0.3 ml the success of the stripped females was 62.5 %. Hatching in all cases occurred after 30 hours latency period, at temperature 27 C^o. However, differences between treatments are not significant except on the number of eggs released. Males given injections of 0.2 ml, and female and male controls (not injected) failed to be stripped. The effects of HCG and SGnRHa on inducing Claries lazera is shown in Table (2). 1000, 1500, 2250, and 2550 IU HCG alone / kg female lazera were 100, 100, 100 and 66.6 % successful; stripping occurred after 13, 12and 11 hours from injection, at temperature 27.5 C^o. Doses of 50mg and 100mg of SGnRHa alone kg/fish were 58.3% and 50% successful. Hatching of eggs occurred after 38 hours; at temperature 27 C^o. Males given 0.5 ml injection containing 2500 IU HCG, and control females and males not injected failed to produce eggs and semen at stripping trials. Differences between the HCG and the SGnRHa are however not significan.

Clarias Lazera

Table-1: Effect of SGnRHa on enabling fish stripping

SEX	NO	WT Kg	AL cm	HOR	DOSE I/kg fish	NFS	%F.S	TS	NER	%FER	%H	SUR %
Female	8	3.1	51.6	SGnRHa	0.3ml	5	62.5	15	23115	57.5	5	10
Female	8	3.0	51.9	SGnRHa	0.4ml	5	62.5	14	24537	72.5	2	-
Female	8	2.7	44.6	SGnRHa	0.5ml	7	87.5	11	38434	41	1	-
Female	8	3.3	52.1	Control	0	0	0	0	*	*	*	0
Male	12	2.8	50.1	SGnRHa	0.2ml	0	0	0	0	0	0	0
Male	12	2.7	48.8	SGnRHa	0.2ml	0	0	0	0	0	0	0
Male	12	1.7	48.1	SGnRHa	0.2 ml	0	0	0	0	0	0	0

Clarias Lazera

Table-2: Effect of HCG and SGnRHa on enabling fish stripping

SEX	NO	WT Kg	AL cm	HOR	IU or mg/ /Kg fish	NFS	%F.S	TS	NER	%FER	%H	SUR %
Female	3	1.5	45.2	HCG	2250IU	3	100	12	18019	60	27	60
Female	3	1.9	48.5	HCG	1500IU	3	100	13	13003	65	11	40
Female	3	2.1	49.1	HCG	2500IU	3	100	11	14211	75	5	50
Female	6	3.2	48.2	HCG	500IU	4	66.6	12	18000	0	0	-
Female	12	2.8	46.1	SGnRHa	50mg	7	58.3	15	24002	45	29	25
Female	6	3.1	45.1	SGnRHa	100mg	3	50	14	8500	-	-	-
Female	9	2.6	47.8	Control	0	0	0	*	*	*	*	0
Male	6	2.2	45.1	HCG	0	0	0	0	0	0	0	0
Male	24	3.5	48.6	SGnRHa	0	0	0	0	0	0	0	0

Fig-1: clarias lazera

Fig-2: method of injection

DISCUSSION

SGnRHa

Adebay [10] used 0.3 ml ovaprim / kg of Claris gariepinus. Eggs release occurred 11- 18 hours later. In the present study same results were obtained with SGnRHa at concentration of 0.3, 0.4 and 0.5 ml / kg lazera weight.

The present study also agrees with Brzuska [11] who successfully used SGnRHa (0.5 ml /kg) for females of African cat fish; Haniffa *et al*. [12] and Sridhar *ea al.* [12] used ovaprin (LC-RHa) at 0.3 – 0.5 ml / kg fish body weight. Their results agree with results obtained for SGnRHa with females in the present study (**table 1, 2).**

HCG

In the present study HCG was used at concentrations of 1000 - 2500 IU for stripping of lazera was (66.6 – 100 % success). This stimulated eggs release after 8 to 13 hours **(table 2).** This agrees with Thalatthiasi *et al*. [13] Carreon *et al*. [14] and Alaiwa [8]. Sahoo *et al*. [15] injected Asian cat fish by HCG (3000 – 4000 IU per kg body weight); the fish were stripped after 11 hours. ANIM [16] injected Australian fresh water fish Murray code and Maccullochella peedi by HCG (1000, 2000 IU) / kg body weight, stripping occurred and this agree with this study.

The results of this study showed hatching occurred after 24-48 hours for lazera. FAO [17] reported that the spawning time for Chinese carp, depends mainly on temperature of culture water; optimum 25 C^o - and maximum 31 C^o , this result agrees with the present study. Haniffa [18] used HCG (1000, 2000, and 3000IU) 1ml/kg body weight of C punctatus, it gave successful stripping and this result agrees with this present study.

REFERENCES

1. Rottmann RW, Shireman JV, Chapman FA. Hormonal control of reproduction in fish for induced spawning. Southern Regional Aquaculture Center; 1991 Nov 1.
2. Luxhøj JT, Riis JO, Stensballe B. A hybrid econometric—neural network modeling approach for sales forecasting. International Journal of Production Economics. 1996 Jun 1;43(2):175-92.
3. Harvey BJ, Hoar WS. Theory and practice of induced breeding in fish [Arabic version].
4. Lam TJ. Applications of endocrinology to fish culture. Canadian Journal of Fisheries and Aquatic Sciences. 1982 Jan 1;39(1):111-37.
5. Donaldson EM, Hunter GA. 7 Induced Final Maturation, Ovulation, and Spermiation in Cultured Fish. Fish physiology. 1983 Dec 31;9:351-403.
6. Yousefian M, Mousavi SE. The mechanism of reproduction and hormonal function in finfish species: A review. Scientific Research and Essays. 2011 Aug 26;6(17):3561-70.
7. Fostier A, Jalabert B. Physiological basis of practical means to induce ovulation in fish. InProceedings of the International Symposium on Reproductive Physiology of Fish 1982 Aug 2 (pp. 164-173). Pudoc Wageningen.
8. Alaiwa FA. Fish Farms in Fresh Water, Establishment and management (Egypt). 1982.
9. Osman HA. Induced breeding of bulti and garmute, MSC, Juba Univesity, fac of Natural res andInvironmental Study; 1998.
10. Adebayo OT. Reproductive performance of African Clariid Catfish Clarias gariepinus broodstock on varying maternal stress. Journal of fisheries International. 2006;1(1-2):17-20.
11. Brzuska E. Artificial propagation of African catfish (Clarias gariepinus): differences between reproduction effects after stimulation of ovulation with carp pituitary homogenate or GnRH-a and dopaminergic inhibitor. Czech Journal of Animal Science. 2003 May 1;48(5):181-90.
12. Haniffa MA, Sridhar S. Induced spawning of spotted murrel (Channa punctatus) and catfish (Heteropneustes fossilis) using human chorionic gonadotropin and synthetic hormone (ovaprim). Vet. Arhiv. 2002;72(1):51-6.

13. Binte ST, Ahmad AB, Sulaiman MZ. Induced spawning techniques practised at Batu Berendam, Melaka, Malaysia. Aquaculture. 1988 Nov 1;74(1-2):23-33.
14. Carreon JA, Estocapio FA, Enderez EM. Recommended procedures for induced spawning and fingerling production of Clarias macrocephalus Gunther. Aquaculture. 1976 Jul 1;8(3):269-81.
15. Sahoo SK, Giri SS, Chandra S, Mohapatra BC. Evaluation of breeding performance of Asian catfish Clarias batrachus at different dose of HCG and latency period combinations. Turkish Journal of Fisheries and Aquatic Sciences. 2008;8(2).
16. ANIM. SCI48, 2003 (5) 181 – 190 www.authorstreem.com/…/chyou \22399 Tilapia male production Selective – hybrids super male (2007).
17. Uhlmann D. Freshwater Aquaculture Development in China. Report of the FAO/UNDP study tour organized for French-speaking African countries. 22 April–20 May 1980= FAO Fisheries Technical Paper No 215.–76 figs, 39 tab., 124 pp. Rome: FAO 1983. ISBN 92-5-101113-3. International Review of Hydrobiology. 1985 Jan 1;70(3):439-40.
18. Haniffa MA, Sridhar S. Induced spawning of spotted murrel (Channa punctatus) and catfish (Heteropneustes fossilis) using human chorionic gonadotropin and synthetic hormone (ovaprim). Vet. Arhiv. 2002;72(1):51-6.