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Effects of exogenous hormone injections on milt consistency in newly caught, wild milk fish

J.V. Juario, G.F. Quinitio, J. Banno and M. Natividad

The study was conducted to find out the effects of single injections of human chorionic gonadotropin (HCG) (Ayerst Laboratories, Inc.) and Durandron Forte 250, a long acting preparation (N.V. Organon Oss, Holland), on sperm motility, vitality and density and on the consistency of milt in newly caught, wild, mature milk fish.

Three groups of males were used. The first group received a single injection of 1 ml Durandron Forte 250 (a combination of 30 mg testosterone isocaproate, and 100 mg testosterone decanoate in 1 ml of an oily solution), the second 5000 IU HCG, and the third (control) 1 ml olive oil. Due to the limited number of specimens, only three fishes were used per treatment and no attempt was made to define the most effective dose per kg body weight of fish.

Sperm motility and vitality and milt consistency were checked for all three groups of fish initially 6 hr after acclimation in holding tanks and subsequently every 24 hr after the hormones had been injected. Motility and vitality was assessed as described by Mounib (1978), except that the degree of progression or vitality of motile sperms was based on a scale of 0 to 3.

Results are shown in Table 1. Before treatment, the males had either viscous or small amount of thin milt. A day after the hormone treatment, the milt became more fluid and copious and was dispersed easily when mixed with seawater. As observed by Clemens and Grant (1965) in carps injected with pituitary homogenates, the density of sperms decreased as the milt became more fluid and copious.

Males injected with Durandron Forte 250 had copious milt for a maximum of 4 days and were in good running condition for a maximum of 7 days. The percentage of motile sperms remained between 30 and 40 for fish 1D from day 1 to 7, and between 20 and 30 for fishes 2D and 3D from day 1 to 4. Fishes injected with HCG had copious milt only for one day after the injection but they remained in good running condition for about 2 days. The percentage of motile sperms decreased from 30 on day 1 to 5 on day 2 for fish 5H, and from 20 on day 1 to 10 on day 2 for fish 4H. No milt could be expressed or withdrawn with a cannula from the control fishes given olive oil 2 to 3 days after they had been held in captivity.

Table 1. Response of mature male milkfish to treatment with Durandron Forte 250 and HCG.

Fish no. ^a	Body wt. (kg) ^b		Days after treatment				
			0	1	2	3	4
1D	6.5(6.4)	Mo: ^c Mi: ^d	5% ± +	45% +3 +++	40% +3 +++	40% +3 +++	40% +3 +++
2D	7.0(6.8)	Mo: Mi:	30%+3 ++	30% +3 +++	30% +3 +++	20% +3 +++	30% +2 +++
3D	4.5(5.8)	Mo: Mi:	1% +1 +	30% +2 +++	20% +2 +++	20% +3 +++	30% +3 +++
4H	6.5(5.8)	Mo: Mi:	1% +1 +	20% +3 +++	10% +2 ++	dry	dead
5H	6.5(6.0)	Mo: Mi:	30% +2 ++	20% +2 +++	30% +2 ++	5% +2 +	dry
6H	4.0	Mo: Mi:	5% +2 +	10% +2 ++	10% +2 ++	dry	
7C	6.5(6.6)	Mo: Mi:	50% +3 ++	20% +3 +	dry	—	—
8C	6.5(7.1)	Mo: Mi:	20% +2 ++	20% +3 ++	20% +2 ++	dry	dead
9C	6.5	Mo: Mi:	10% +2 ++	20% +2 ++	dry		

^aInjected with Durandron Forte (D), HCG (H), and olive oil (C).

^bEstimated (actual).

^cSperms move very slowly (±), slowly (+ 1), fast but could be followed (+2), fast and difficult to follow (+ 3).

^dMilt thick, in small amount (+), thin, in small amount (++) , thin, in copious amount (+++).

5	6	7	8	Remarks
30% + 3 +++	30% + 3 ++	40% + 2 ++	dry	No. of sperms decreased from 4.3×10^{12} to 3.5×10^{12} /ml 24 hr after hormone injection; fish died on day 15; about 3 ml milt collected daily until day 4 by pressing abdomen. About 3 ml milt collected daily until day 4 by pressing abdomen.
dead				About 3 ml milt collected daily until day 4 by pressing abdomen.
dead				No. of sperms decreased from 5.2×10^{12} to 3.3×10^{12} /ml 24 hr after hormone injection; about 3 ml milt collected on day 1 by pressing abdomen. About 3 ml milt collected on day 1 by pressing abdomen.
dead				Fish still alive to date.
dead				No. of sperms decreased from 5.1×10^{12} to 2.7×10^{12} /ml 24 hr after being kept in captivity. Fish still alive to date.

The observations concur well with those of other investigators. Testosterone propionate, a 17-methyltestosterone and HCG have been found effective in inducing spermiation in *Carassius auratus* (Yamasaki and Donaldson, 1969), *Fundulus heteroclitus* (Lofts *et al*, 1966), and *Heteropneustes fossilis* (Sundararaj and Goswami, 1965; Sundararaj and Nayar, 1967). In contrast to HCG, single injections of Durandron Forte 250 were effective not only in inducing spermiation but also in maintaining newly caught, mature males in good running condition for a maximum of 7 days despite daily handling and collection of about 3 ml milt. Shehadeh *et al*, (1973) succeeded in preventing milt resorption in mature male mullets held in the laboratory during spawning season by injecting them with 17-methyltestosterone at 5 mg/100 g body weight on alternate days for 42 days; those injected with 20 IU HCG/100 g body weight on alternate days were kept in running condition for 2 weeks. In both cases, however, no significant amount of milt was collected. In our case, it could very well be that if milt were not collected daily the male milkfish treated with Durandron Forte 250 would have remained in good running condition for a longer period.

Obviously there is an advantage in using Durandron Forte 250 in inducing thinning of milt in mature milkfish during the natural breeding season to facilitate fertilization of eggs. Aside from its long-lasting effect which minimizes handling of fish, it is much cheaper than HCG.

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