

Note

Acclimatisation of *Mugil cephalus* (L) procured from commercial catches

MATHEW ABRAHAM, P. KISHORE CHANDRA, M. KAILASAM,
AND A. VASANTHAKUMAR CHARLES

Central Institute of Brackishwater Aquaculture,
Chennai — 600 008, India

ABSTRACT

Treatment of *Mugil cephalus* procured from wild with antibiotic and acclimatisation in seawater treated with calcium hypochlorite are reported. Two factor analysis of variance has revealed that the quality of water and the size of the fishes have significantly affected the survival rate ($P < 0.01$). The overall survival rate in treated water was 89.6 % and in controls 32.0 %. Smaller fishes showed better survival.

Mortality of breeders procured from wild is reported to be a major constraint in the induced breeding of *Mugil cephalus* (Ramakrishna, 1989; Krishnan, 1989; Rajyalakshmi *et al.*, 1991; Anon., 1996). *M. cephalus* is a very active fish exhibiting violent behaviour and therefore is prone to injuries during capture and subsequent handling. The authors have also experienced high rate of mortality eventhough they were treated with acriflavin during acclimatisation while building up a captive broodstock. They loose scales, get infected and die within 2-4 days of procurement.

To overcome this problem a series of experiments were conducted using treated and untreated sea water and the details are shown in Table 1. A total number of 125 fishes in 3 size groups were used in the experiments. Live adult and sub-adult fishes without any

visible injuries were collected from Muttukadu and Kovalam (near Chennai) fish landing centres and transported with aeration. They were treated with acriflavin at the rate of 1 ppm and segregated into three size groups. Fishes used in controls were stocked in 10 t FRP tanks with untreated sea water. Experimental fishes were treated with antibiotic (Furazolidone) at the rate of 10 ppm for two hours and released into 10 t FRP tanks containing seawater treated with calcium hypochlorite ($\text{Ca}[\text{OCl}]_2$) at the rate of 10 ppm. The treated water was earlier dechlorinated by vigorous aeration. Traces of residual chlorine, if any, was neutralised with sodium thiosulphate ($\text{Na}_2\text{S}_2\text{O}_4$) in the ratio of 1:8. Aeration was provided in all the tanks. Water change was done in controls at the rate of 80 % daily whereas no water change took place in experimental tanks. Within a few hours

TABLE 1 The survival rates of *Mugil cephalus* of different size groups in treated and untreated seawater

Size groups (mm)	Expt No	Treated water		Untreated water	
		No of fishes	Survival rate (%)	No of fishes	Survival rate (%)
I 240-380 $\bar{X} = 312$	1	6	100	4	50
	2	5	100	4	50
	3	6	100	6	33
	4	5	100	6	33
		22	100	20	41
II 381-410 $\bar{X} = 395$	1	7	86	4	25
	2	5	100	7	28
	3	6	83	6	33
	4	6	83	4	50
		24	88	21	34
III 411-460 $\bar{X} = 437$	1	5	80	5	40
	2	5	80	4	25
	3	6	83	5	20
	4	5	80	3	0
		21	81	17	21
Overall		67	89.6	58	32

of introducing the fishes into the tanks, they released a lot of excreta and it was removed immediately from all the tanks. Each experiment was continued for five days.

In general the survival rates were very good in the experimental tanks. Smaller fishes ($\bar{X} = 312$ mm) showed 100 % survival in experimental tanks while in the control survival was 41 %. Medium size group ($\bar{X} = 395$ mm) showed a survival of 88 % in treated water and 34 % in controls. Larger fishes ($\bar{X} = 437$ mm) showed 81 % survival in treated water and 21 % in untreated water.

The data on survival rate was subjected to two factor analysis of variance as explained by Jerrold (1996). It revealed that the size of fishes and treatment of water significantly affected the survival rate. However, the interac-

tion effect was not significant (Table 2). The overall survival rate in treated water (89.6 %) was significantly higher than that of the survival rate in untreated water (32.2 %). Survival rate in the small size group was significantly higher than that of medium size group ($P < 0.05$) and large size group ($P < 0.01$).

TABLE 2 Two - factor analysis of variance for the survival rate of *M. cephalus* of different size groups in treated and untreated sea water

Source	DF	SS	MS	F
Total	23	23003.8		
Blocks	5	21317.3		
Treatment (A)	1	19722.6	19722.6	210.5**
Size group (B)	2	1560.3	780.1	8.33
Interaction (A x B)	2	34.4	17.2	0.18**
Within block (error)	18	1686.5	93.7	

** Significant at 1 % level.

NS = Not significant

and also the medium size group survival rate was significantly higher than that of large size group ($P < 0.05$).

The higher rate of survival of smaller size groups may be due to its less vulnerability to injuries during capture and handling. The treated seawater which is free of water borne fungi, bacteria and virus provided a hygienic condition and hence gave better survival rates. The fishes that have survived in treated water retained normal body colour, complete scales and fins whereas the fishes that died in the control tanks due to infection became partially white in colour, lost scales, developed red spots on ventral side and excess mucous on the body.

The study has clearly indicated that the survival rates will be higher if live fishes procured from wild with minimum injuries for broodstock development or induced breeding are treated with antibiotic and maintained in seawater treated with calcium hypochlorite.

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