

Use of Tranquilizer in Live Storage of *Clarius batrachus*

R. CHAKRABARTI, S.S. GUPTA and C.V.N. RAO
V R C of Central Institute of Fisheries Technology, Visakhapatnam 530 003

Survival rate and damage to skin of *Clarius batrachus* during live storage in water containing tranquilizer tricaine methane sulphonate (M.S.222) at 0, 40, 50 and 60 ppm were studied. 50 ppm M.S.222 was found ideal for storing live fish. During 6 days storage the survival rate in summer was 86.4% and 89.0% in winter. When the concentration of M.S.222 was increased or decreased the mortality rate increased.

Key words: Live storage, tricaine methane sulphonate, *Clarius batrachus*, survival

Clarius batrachus, a commercially important freshwater fish, is regularly transported live from Andhra Pradesh to Calcutta during November to March. The containers used are cylindrical drums with perforated lids. Each container holds 10-15 kg fish in water in the ratio 1:3. It is known that over 20% of the fish die on the way in summer while about 10% die in other seasons, during the journey which takes 24-40 h. The two strong pectoral spines present on the body cause injury to others in the container during transport. The price of the fish at the destination is, to a large extent, decided according to the extent of damage of the skin. Tricaine methane sulphonate (methane sulphonate salt of meta-amino benzoic acid ethyl ester) commercially known as M.S.222 is widely used in United States of America in the transport of trout (Thompson, 1959). Attempts made to prolong the span of life and reduction of skin damage of *C. batrachus* by using M.S.222 are reported in this paper.

Materials and Methods

Aqueous solutions containing 40, 50 and 60 ppm each of M.S.222 in potable water were prepared. 1.5 kg each of live *C. batrachus* (80-110 g each) with sound skin were kept in three tubs of diameter 25 cm in the above solutions in the ratio of fish to solution 1:3. Same quantity of fish kept in a similar tub in potable water served as control. Survival rate and the incidence of skin injury were observed at regular intervals. Solutions in the tubs were changed every 48 hours. Dissolved oxygen in the solution in each tub was measured using a D O Meter (Bio-chem. Int. Madurai) at regular intervals. The experiments were conducted during summer and winter at Kakinada, Andhra Pradesh.

Results and Discussion

Table 1 shows the effect of M.S.222 on the survival rate of *C. batrachus* in the summer and winter seasons. No difference in survival was noticed among the different

samples in two days; but the survival rate decreased thereafter at a faster rate in all containers except the one with 50 ppm M.S. 222. This concentration was found most effective where the survival rate was 90.9% with minimum skin injury, even after 4 days in summer. Prior to the change of solution 50-60% depletion of oxygen in 48 hours was noticed in all cases.

Table 1. Effect of M. S. 222 on survival (A) of *Clarius batrachus* and skin injury (B), %

*Temperature of solution 0°C	Concentration of M.S.222 ppm	Period of storage, days							
		0		2		4		6	
		A	B	A	B	A	B	A	B
27 - 31 (summer)	0	100	Nil	85.0	14.8	78.1	26.6	25.9	36.6
	40	100	Nil	92.3	Nil	83.3	16.6	63.6	26.6
	50	100	Nil	92.3	Nil	90.9	16.6	86.4	18.2
	60	100	Nil	92.0	7.6	76.9	17.8	65.0	22.2
23.5 - 27 (winter)	0	100	Nil	93.2	5.6	83.3	10.0	40.2	25.9
	40	100	Nil	95.0	5.8	86.9	10.0	76.2	12.5
	50	100	Nil	100.0	Nil	90.6	Nil	89.0	Nil
	60	100	Nil	95.0	Nil	76.6	Nil	53.8	Nil

* Temperature recorded inside the laboratory.

Survival rate in winter was more than that in summer with respect to the corresponding solutions for the same duration of study. Fish with skin injury was also comparatively less in winter. As the winter at Kakinada is not severe, any marked change in survival rate was not noticed. M.S. 222 at 50 ppm level was found very effective to maintain high survival rate in winter also. Sreenivasan (1962) reported that M.S. 222 was quite effective and harmless in transporting four breeders of *Cyprinus carpio* in tin container. He also reported that M.S. 222 at 50 ppm was not toxic even on prolonged exposure of fingerlings above 5.0 cm to adults of *C. carpio*.

The study showed that the tranquilizer M.S. 222 at 50 ppm level in water could be used to reduce mortality and skin injury during live storage of *C. batrachus*.

References

- Sreenivasan, A. (1962) *Indian J. Fish.*, **6**, 738
 Thompson, R.B. (1959) *Prog. Fish Cult.*, **21**(2), 96