Secondary Stress Response to High Stocking Density in Fry of Gray Mullet (*Mugil cephalus*)

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Abstract

Monoculture and polyculture of gray mullet (*Mugil cephalus*) depends on the supply of wild seed. Heavy mortalities occur because optimum stocking requirements during transportation of fry are unknown. The present experiment was conducted to determine the optimum stocking density of gray mullet fry in closed oxygenated polythene bags during transportation. Glycogen content and activity of metabolic enzymes including lactate dehydrogenase (LDH), malate dehydrogenase (MDH), aspartate amino transferase (AST), and alanine amino transferase (ALT) were investigated to understand the effect of stocking density on metabolism. Fry (1.2±0.48 g, 2.4±0.52 cm) were packed in five densities (80, 160, 240, 320, 400/l). At the end of 18 h of transportation, 24 specimens from each density were randomly sampled. The glycogen content decreased significantly (*p*<0.05) as the stocking density increased. The activity of enzymes LDH, MDH, AST, and ALT showed a rising trend with increasing stocking density. Dissolved oxygen and pH decreased significantly as the stocking density increased while ammonia nitrogen, nitrite nitrogen, and carbon dioxide increased. Survival at destination significantly decreased as the stocking density rose. The optimum stocking density for gray mullet fry for transportation up to 18 h was 240 fry/l.

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