

## **Water temperature and stocking density for long-hour transportation of hybrid grouper *Epinephelus fuscoguttatus* x *E. lanceolatus***

### **ABSTRACT**

This study aims to investigate the effect of water temperature and stocking density in a longhour transportation of hybrid grouper [tiger grouper (*Epinephelus fuscoguttatus*) x giant grouper (*E. lanceolatus*)]. A factorial design of three different water temperature levels (16, 18 and 21°C) and three different stocking density levels (120, 180 and 240 g L<sup>-1</sup>) was tested in this experiment. The experiment was conducted using a 10 L rectangular aquarium, equipped with a water chiller and aeration to maintain the water temperature at the required level. The hybrid grouper (average body weight: 5.11±0.34 g) were placed in each aquarium with different stocking density levels for a 12-hour period. The results show that the survival of fish was significantly lower ( $p < 0.05$ ) at a lower water temperature level (16°C; 50.2%), while there is no significant difference for the other temperature levels considered, 18 and 21°C. The results also show that the lowest water temperature had a significantly ( $p < 0.05$ ) lower pH value in each stocking density. The glycogen content in fish liver was significantly higher ( $p < 0.05$ ) at a low water temperature and low stocking density. A similar trend can be observed on the dissolved oxygen of water during the experiment. Moreover, the ammonia concentration was significantly ( $p < 0.05$ ) higher at a higher water temperature and a higher stocking density. The findings in the present study suggest that hybrid grouper can be economically transported for a long hour journey at a high stocking density (240 g L<sup>-1</sup>), with a water temperature level between 18 to 21°C.