



## OPTIMIZATION OF THE PRE-SLAUGHTER PURIFICATION PROCESS IN NILE TILAPIA: MEAT QUALITY PARAMETERS

Valfredo Figueira da Silva<sup>1</sup>, Guilherme Malissi Nascimento<sup>2</sup>, Maria Ildilene da Silva<sup>3</sup>, Marcio Douglas Goes<sup>4</sup>, Claucia Aparecida Honorato<sup>5</sup> and Elenice Souza dos Reis Goes<sup>6</sup>

### ABSTRACT

The transport of live fish is a common practice in aquaculture, being very important in pre-slaughter. During transport, the animals are in a state of agitation and imbalance, due to the high densities used to reduce costs with road transport. Thus, a rest period after transport in the processing unit can provide a mitigation of transport stress, reducing its negative effects on the quality of the fillets. The objective of this study was to evaluate different densities and pre-slaughter resting times on the quality characteristics of Nile tilapia fillets. The experiment was conducted at two densities (75 and 150 kg/m<sup>3</sup>) and four purification times (1, 3, 5 and 7 hours), in a total of eight treatments, with ten animals ( $\pm 700$  g) slaughtered per treatment. Initially, the fish were transported for about an hour, and then distributed in boxes with water connected in recirculation, in different densities, with one box per treatment. After each time, the fish were numbed by perforating cranial percussion and slaughtered by bleeding the gills. The fillets were processed until the fillets were obtained, which were stored in a cold chamber ( $\pm 3^{\circ}\text{C}$ ) for 24 hours. From the fillets, analyses of pH, color, water retention capacity, weight loss by cooking and *drip loss* were performed. For pH, there was a significant effect ( $P < 0.01$ ) for the different resting times, where 1 hour caused fillets with lower pH, and at 5 hours of clearance the highest mean pH was verified. The water retention capacity was not different ( $P > 0.05$ ) between the treatments. However, in the weight loss due to cooking, there was a significant effect of the different purification times ( $P < 0.01$ ), with lower averages for fish fillets submitted to 5 and 7 hours of rest. For *drip loss*, the interaction between density and clearance times was significant, with a higher mean observed at 150 kg/m<sup>3</sup> associated with 3 hours of clearance, and a lower *drip loss* at 150 kg/m<sup>3</sup> + 5 hours of rest. In the color of the fillets, there was a significant effect ( $P < 0.05$ ) of the clearance times for the red and yellow intensities, where resting for 7 hours caused fillets with lower intensity of red and yellow colors. It is concluded that pre-slaughter clearance for 7 hours is effective to reduce weight losses due to cooking and changes in the color of Nile tilapia fillets.

**Keywords:** Animal welfare. Pre-slaughter management. *Oreochromis niloticus*.

**Funding Agencies:** To CNPq for granting a scholarship to the first author.

<sup>1</sup>Federal University of Grande Dourados- UFGD

<sup>2</sup>Federal University of Grande Dourados- UFGD

<sup>3</sup>Federal University of Grande Dourados- UFGD

<sup>4</sup>Federal University of Grande Dourados- UFGD

<sup>5</sup>Federal University of Grande Dourados- UFGD

<sup>6</sup>Federal University of Grande Dourados- UFGD