

ABSTRACT

Evaluation of Sensory, Physical, Chemical and Microbiological Characteristics of Fresh, Chilled and Frozen Nile Tilapia (*Oreochromis niloticus*)

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The study was conducted to evaluate the sensory, physical, chemical and specific microbiological characteristics of Nile tilapia (*Oreochromis niloticus*) under fresh (30°C: 12 hours), chilled (5°C; 2 weeks) and frozen (-18°C; 6 weeks) storage conditions. Samples were collected from local aquaculture farms and subjected to AOAC and BAM standard methods for sensory, physical (moisture %, protein % and fat %), chemical (pH) and specific microbiological (aerobes and *E. coli*) analyses. Sensory values ranged from Scores 1 to 3 for fresh samples for the EU Grading Method and Torry Grading Scheme. Values for fresh fish were, pH: 6.47 to 5.87 +/- 0.2; aerobes: 7.156 +/- 0.45 log CFU/g, moisture: 24.13 to 18.79 +/- 10.11; protein: 19.72 to 19.07 +/- 1.06, and fat: 1.8 to 1.83 +/- 0.42. Values for chilled fish were: pH: 6.37 to 6.74 +/- 0.38; aerobes: 7.891 to 8.517 +/- 0.70 log CFU/g; moisture: 22.64 to 21.92 +/- 1.73; protein: 18.90 to 17.66 +/- 2.01 and fat: 1.19 to 0.12 +/- 0.53. Values for frozen fish were, pH: 6.37 to 5.85 +/- 0.26; aerobes: 7.891 to 8.240 +/- 0.61 log CFU/g; moisture: 22.64 to 23.88 +/- 1.68; protein: 18.90 to 16.46 +/- 2.41 and fat: 1.19 to 1.11 +/- 0.49. There were significant differences ($p < 0.05$) in the sensory evaluation and pH of fresh fish, with the presence of *E. coli*, with no significant differences ($p > 0.05$) in the aerobic count, moisture, protein and fat % of the fresh fish. There were significant differences in the aerobic count and fat % with the presence of *E. coli* of chilled fish but no significant differences with pH, moisture and protein %. The aerobic count was significantly different in frozen fish, with no presence of *E. coli* while pH, moisture, protein and fat % showed no significance. Nile tilapia quality increased as storage conditions changed from ambient to chilled to frozen.

Keywords: Swarath Renuka, Nile tilapia (*Oreochromis niloticus*), sensory properties, physical properties, chemical properties, microbiological quality, proximate analysis, pH, *E. coli*, fresh fish, chilled fish, frozen fish