

**TITLE:** MICROBIOLOGICAL QUALITY OF FRESH TILAPIA MARKETING IN THE FEDERAL DISTRICT

**AUTHORS:** FERREIRA, A.C.A.O., MONTEIRO, E.S., SOUSA, D.O., PAVELQUESI, S.L.S., SILVA, I.C.R. ORSI, D.C.

**INSTITUTION:** LABORATÓRIO DE CONTROLE DE QUALIDADE, FACULDADE DE FARMÁCIA – UNIVERSIDADE DE BRASÍLIA, CAMPUS DE CEILÂNDIA (CENTRO METROPOLITANO, CONJUNTO A, LOTE 01, CEILÂNDIA, DISTRITO FEDERAL, BRASIL, CEP: 72220-900)

**ABSTRACT:**

Tilapia (*Oreochromis niloticus*) is the most cultivated species of freshwater fish in Brazil, corresponding to 58.4% of the total aquaculture fish production. Fish is an important source of protein and provides many health benefits. However, fish is one of the most highly perishable food products and are highly susceptible to deterioration and to bacterial contamination. In this context, the Federal District is the second consumer market for fish in the country and the quality of this product is of great relevance to public health. The aim of this study was to evaluate the microbiological quality of fresh tilapia commercialized in Brasilia and region. For the microbiological analyses, twenty samples of fresh tilapia were collected from different supermarkets. The analyses performed were: total count of mesophilic and psychrotrophic bacteria, determination of total and thermotolerant coliforms, *Staphylococcus aureus* count and *Salmonella* spp. detection. Molecular identification of *Salmonella* and *S. aureus* was performed by the PCR technique. The results of this study showed that, of the twenty samples analyzed, ten samples (50%) presented the bacterium *Salmonella* spp., confirmed by detection of the *invA* gene in the molecular analysis and, therefore, were unfit for consumption according to Brazilian legislation. The bacterial flora of fish depends on water quality where they live. Penetration and establishment of pathogenic bacteria such as *Salmonella* spp. in different tissues and organs of fish, such as digestive tract, gills and muscle have been reported in polluted aquatic environments. The presence of *S. aureus* was detected in eleven samples (75%), with one sample unfit for consumption by excess of *S. aureus* ( $> 3 \log \text{CFU/g}$ ). It is important to underline that *S. aureus* may occur on fish usually only in low numbers and its contamination probably is consequence of food handlers. The handling practices since capture until storage influence the shelf life of

fish. Inadequate fish handling and cross contamination can contaminate the fish with foodborne pathogens such as *Salmonella* and *S. aureus*. Accordingly, there is a need for a stronger control in the good practices of fish's handling and manufacturing in production chain, in order to improve the final quality of fresh tilapia offered to consumers in the Federal District.

**Keywords:** tilapia, freshwater fish, bacterial contamination, *Salmonella* spp., foodborne pathogens

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