

TITLE: CONTROL OF *SALMONELLA* HADAR INFECTION IN EXPERIMENTALLY CHALLENGED FISH, TAMBAQUI (*COLOSSOMA MACROPOMUM*).

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ABSTRACT:

Tambaqui (*Colossoma macropomum*) is a native fish species of Amazon basin, which has been commercially raised in fish farms around Brazil. It is the second most cultivated fish species in the country. Bacteria of *Salmonella* genus are one of the most important food borne pathogens. In the last years, those bacteria have been associated with contamination of fish carcass in slaughter houses inspected by National System of Inspection of Ministry of Agriculture, Livestock and Food Supply (MAPA). *Salmonella* spp. was shown not to cause disease in tambaqui, but, they have been commonly found in the gut of those animals. As the gut is one of the main sources of carcass contamination during slaughter of fish, the control of *Salmonella* should start when the fish still alive. The use of antibiotics is not recommended to that control, since it is not possible to attend the withdrawal time of the drugs. Therefore, alternative methods have to be developed to control *Salmonella* spp. in fish. The aim of this work was to evaluate the efficacy of different non antibiotic substances to control of *Salmonella* spp. infection in tambaqui. We evaluate three different orally administered substances: 1- Probiotic Aquastar (Biomim, Austria) (composition *Bacillus subtilis* 5×10^{11} UFC/Kg, *Enterococcus faecium* $1,25 \times 10^{12}$ UFC/Kg, *Lactobacillus reuteri* 5×10^{10} UFC/kg, and *Pediococcus acidilactici* $1,25 \times 10^{12}$ UFC/kg); 2- Acidifier Biotronic Top 3 (Biomim, Austria) (composition acetic acid 90 g/Kg, formic acid 180 g/Kg, and propionic acid 45 g/Kg); 3-Humic acid (Aqua Humic, USA). Five groups of tambaqui juveniles were experimentally infected by oral route with the strain Sal33 of *Salmonella enterica subsp enterica* serotype Hadar. After 24 hours of infection, challenged fish started to receive commercial feed mixed probiotic, acidifier, and humic acid. Control group received just commercial feed. Stools samples were collected from all challenged fish at day 1, 2, 3, 4, 5, 6, 7, 9, 10, 12 and 15 post-infection. The samples were inoculated in Rappaport-Vassiliadis broth and incubated at 37 °C for 24 hours. Subsequently, 10 ul of broth were streaked onto Enteric Hektoen Agar and incubated at 37 °C for 24 hours to *Salmonella* isolation. At the 15th day of trial, the group fed with feed plus Biotronic Top 3 showed absence of *Salmonella* in stool samples. The use of organic acids in the feed was able to control *Salmonella* infection in tambaqui. Future studies should be carried out to address the efficiency to that product in field conditions.

Keywords: Salmonellosis, fish, control, acidifier.

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