

**PREBIOTIC (MANNANOLIGOSACCHARIDE-MOS) IN FISH NUTRITION:  
EFFECTS ON NILE-TILAPIA *Oreochromis niloticus* PERFORMANCE<sup>1</sup>**

**PREBIÓTICO (MANANOLIGOSSACARÍDEO-MOS) NA NUTRIÇÃO DE PEIXES:  
EFEITOS SOBRE O DESEMPENHO DE TILÁPIAS-DO-NILO *Oreochromis niloticus***

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World fish production are growing about 10% a year and Brazil presents potential to be the first one in fish production until 2030. However, intensification of aquaculture production systems expose fish to numerous stressors such as poor water quality, crowding, handling and transport which may negatively affect their growth and and limit profitability of aquaculture systems. This current setup favors the use of dietary prebiotics for management of farmed fish as environmentally friendly practice. This study was set out to determine de effects of increasing levels of mannanoligosaccharides (MOS) on growth of juvenile Nile tilapia (*Oreochromis niloticus*). Fish ( $12.62 \pm 0.38$ ) were randomly distributed into 16 cages (0.25m<sup>3</sup> polyvinyl chloride; 20 fish per cage), inside four 5m<sup>3</sup> net-cage at Salto Caxias Hydroelectric water reservoir (Boa Vista da Aparecida, PR). Fish were fed during 60 days with a commercial diet (32%CP) supplemented with 0.0 (control); 0.2; 0.4 and 0.8% dietary MOS (n=4). Water quality parameters (temperature, pH and dissolved oxygen) were monitored during trial. After 60 days feeding trial, fish were fasted for 24 hours and sedated for biometrical parameters to evaluate growth parameters. It was observed no influence ( $p>0.05$ ) of MOS supplementation on Nile tilapia growth parameters (weight gain, feed conversion rate, specific growth rate) as well as for hepatosomatic index. Fish fed 0.4% dietary MOS showed increased ( $p<0.05$ ) feed consumption ( $76.74 \pm 3.98$ ) when compared to fish fed control (un-supplemented) diet ( $69.31 \pm 1.11$ ). MOS are indigestible glucomannoproteins, which provide mannose substrate upon which pathogenic gut bacteria selectively attach and prevents formation of mixed colonies leading to better gut health by increasing regularity, height and integrity of the gut villi and consequent better utilization and absorption of nutrients. Several authors found positive effects of MOS supplementation on fish growth and at same time, others observed no influence of this prebiotic on fish growth. The use of prebiotics as mannanoligosaccharides to improve growth and health status in fish still needs further research for better explanation of contradictory results. The complex carbohydrate structure in the cell wall of yeast, different strains and fermentation conditions, processing methods can all alter their function, as well as MOS concentration, administration period and population status (age, sex, gonadal maturation). For instance, in this experiment, dietary MOS supplementation did not show prebiotic properties such as positive effects on juvenile Nile tilapia growth.

Key words: prebiotic, *O. niloticus*, mannanoligosaccharide