

Effects of some dietary crude plant extracts on the growth and gonadal maturity of Nile tilapia (*Oreochromis niloticus*) and their resistance to *Streptococcus agalactiae* infection

ABSTRACT

A 90-day feeding trial was conducted on the growth performance, feeding efficacy, body indices, various hematological and plasma biochemical parameters, and histopathological examination of the gonads from male and female Nile tilapia fingerlings when fed different crude plant extracts from *Cinnamomum camphora*, *Euphorbia hirta*, *Azadirachta indica*, or *Carica papaya* at 2 g kg⁻¹ compared to a control diet. This was followed by a 14-day challenge to *Streptococcus agalactiae*. All treatments were triplicated, and each treatment consisted of 30 fish. Results showed that *C. papaya* extracts were the most effective at delaying gonadal maturation to both male and female tilapia, as well as significantly increasing ($P < 0.05$) growth performance compared to the control treatment. Similarly, dietary *C. camphora* and *E. hirta* extracts also significantly improved growth, while no significant growth effect was detected between the *A. indica* and control treatments ($P > 0.05$). Further, crude body lipid was lower in the *C. camphora*, *E. hirta* and *C. papaya* treatments, but was only significantly lower for the *E. hirta* treatment compared to the control. Meanwhile, none of the hematological or biochemical parameters were significantly affected, although plasma ALT was significantly lower for tilapia fed *A. indica* compared to the control. After the 14-day bacterial challenge, tilapia fed *C. camphora* supplementation had significantly higher survival, compared to the control, but was not significantly higher than the other supplemented diets. Results indicate that dietary *C. papaya* extract can significantly promote growth and delay gonadal maturation to both male and female tilapia, while *C. camphora* was the most effective prophylactic to *S. agalactiae* and may be a cost-effective and eco-friendly alternative to antibiotics.

Keyword: *Azadirachta indica*; *Carica papaya*; *Cinnamomum camphora*; *Euphorbia hirta*; Gonad maturation; *Streptococcus agalactiae*