

Dietary *Euphorbia hirta* extract improved the resistance of sharptooth catfish *Clarias gariepinus* to *Aeromonas hydrophila*

ABSTRACT

Aqueous and methanol extracts of lemon *Citrus limon* peel, *Euphorbia hirta* (aerial parts), and fenugreek *Trigonella foenum-graecum* seeds were tested for their in vitro antimicrobial activities against the bacterium *Aeromonas hydrophila*. A swab paper disk method showed that the methanol extract of *E. hirta* (EHE) had the largest inhibition zone and the lowest minimal inhibitory concentration compared to all other herbal extracts. Based on these results, EHE was included in the diets of Sharptooth Catfish *Clarias gariepinus* at 0 (control), 2, 5, or 7 g/kg of diet (experiment 1). Each treatment was conducted in triplicate, with 30 fish (mean weight \pm SE = 9.4 ± 0.4 g) in each replicate. After 30 d, the growth, feed intake, hepatosomatic index (HSI), and plasma biochemical parameters were measured. With a separate batch of Sharptooth Catfish, the efficacy of the EHE diets in conferring fish resistance to *A. hydrophila* over 30 d was compared to that of a diet containing oxytetracycline (OTC; experiment 2). Six treatments were conducted in triplicate groups of 30 fish (mean weight \pm SE = 9.0 ± 0.3 g); the Control fish were fed the control diet and were not injected with *A. hydrophila*, while the Control-AH and OTC-AH groups were infected with *A. hydrophila* and were fed either the control diet or the diet containing OTC at 1 g/199 g. The other three treatments included fish that were injected with *A. hydrophila* but fed diets with increasing EHE at 2, 5, or 7 g/kg. Experiment 1 showed no change to growth, feeding efficiency, HSI, or plasma biochemical parameters. In experiment 2, however, fish that were fed dietary EHE at 5 g/kg had significantly lower mortality than the Control-AH group, with further resistance observed for fish fed EHE at 7 g/kg. Dietary OTC was more effective than EHE as a prophylactic to *A. hydrophila* infection in Sharptooth Catfish. Nevertheless, EHE can potentially be a valuable dietary supplement to improve the resistance of Sharptooth Catfish to *A. hydrophila* infection.

Keyword: *Euphorbia hirta*; Sharptooth catfish; Diet; *Aeromonas hydrophila*; *Clarias gariepinus*