

## Prevention methods against aeromonas hydrophila and pseudomonas fluorescens infection in tilapia

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### Abstrak

This research evaluated a method involving provision of a concoction of *Boesenbergia pandurata*, *Solanum ferox* dan *Zingiber zerumbet* extracts for pathogen prevention in tilapia. The concentration of each extract was 600 ppm of *Boesenbergia pandurata*/BP, 900 ppm of *Solanum ferox*/SF and 200 ppm of *Zingiber zerumbet*/ZZ. The examination was performed by issuing two combinations of extracts (SF:BP, SF:ZZ) against *Aeromonas hydrophila* and *Pseudomonas fluorescens* (105 CFU/mL-1). Preventive trials were carried out by providing a concoction of extracts through intraperitoneal injection (0.1 mL/fish) in tilapia (15 $\hat{A}$  $\pm$ 2 g) and the immersion method was performed by bathing the fish in the extracts for 20 minutes, with pathogen challenging during the following 24 h being carried out. The composition of the used extract was by SF60:ZZ40; SF50:ZZ50; BP90:SF10; BP50:SF50; and fish without being given the extract.

Haematology and immunology parameters were observed at the 4th week after challenges with pathogenic bacteria. The number of white blood cells (WBCs) increased significantly ( $P < 0.05$ ) compared to controls without extract, with a similar increase observed for red blood cell (RBCs), but hematocrit (Ht) and hemoglobin (Hb) values did not significantly increase compared to control. Phagocytic index, respiratory burst and lysozyme activities also experienced a significant increase in fish fed with combined extracts compared to controls. The numbers of pathogenic bacteria in the body of the fish given extract were also lower than the control and significantly different at the 4th week. The results of this study indicate that giving combined extracts of SF50:ZZ50 and BP90:SF10 provides the best protection (RPS) against infection of *A. hydrophila* and *P. fluorescent* by injection of 100%. This study indicates that providing combined extracts by injection and immersion in the ratio of SF50:ZZ50 has a positive effect in increasing the non-specific immune system of tilapia and increasing protection against bacterial infections.