Water condition and identification of potential pathogenic bacteria from red tilapia reared in cage-cultured system in two different water bodies in Malaysia

Abstract

The need to conduct periodic surveillance on the presence, associated pathological alteration in tissues and the various environmental factors that could trigger some potential fish pathogens that result to disease outbreak in tilapia farming in Malaysia is paramount. This study was conducted to determine the presence of potential pathogenic bacteria in fish and water bodies that could trigger disease outbreak. Some potential pathogenic bacteria were isolated and identified from water, sediments and tissues of red tilapia reared in cage-cultured system in Kenyir Lake, Terengganu and Semantan River, Pahang, east of Peninsular Malaysia, also the water quality was assessed using standard techniques. The brain, eye and kidney were collected randomly from 30 tilapias from each of these water bodies. The bacteria were isolated and identified using standard methods. In Kenyir Lake, bacterial isolates that predominated in selected tissues of tilapia were Micrococcus spp., Aeromonas hydrophila, Staphylococcus spp., Pseudomonas aeruginosa and Enterobacter cloacae while in Semantan River, A. hydrophila and Staphylococcus spp. predominated. The water quality of Semantan River was found to be above the recommended limits of ammonia, sulphide, iron and nitrite-nitrogen levels. For the water sample, Staphylococcus xylosus was the most predominant bacteria isolates in Kenyir Lake, while Staphylococcus lentus was the most predominant of Semantan River. From the sediments, Pseudomonas aeruginosa and Enterobacter cloacae were isolated in Kenyir lake while, A. hydrophila was found in Semantan river. From this investigation, A. hydrophila and Staphylococcus spp. are the predominant bacteria in Red hybrid tilapia; water quality, animal and human activities may play a role in the susceptibility of red tilapia to these potentially pathogenic bacteria which have not being previously observed in Malaysia. There is need for periodic surveillance of water, sediment and tissues of fish to detect the pathogens of paramount importance to Malaysian aquaculture industry.

Keyword: Bacteria; Red hybrid tilapia; Analytical profile index (API) test; Water quality; Lake; River.