Evaluation of Enterococcus hirae LAB3 as Potential Probiont against Vibrio harveyi in Artemia nauplii and Asian Seabass Larvae (Lates calcarifer) cultures

ABSTRACT

Aim: To evaluate the ability of to inhibit the growth of V. harveyi in in-vitro co-culture assay and confer protection towards Artemia nauplii and seabass larvae against V. harveyi in in-vivo assay. Methodology: Enterococcus hirae was co-cultured with V. harveyi for 96 hrs and the samples were taken every 6 hr interval to determine the growth of the pathogen in in-vitro assay. In the in-vivo assay, E. hirae at different concentrations were introduced to the Artemia nauplii and seabass larvae cultures. After 24-hr incubation period, V. harveyi 6 -1 at concentration 10 CFU ml were added into the respective experimental tanks. Mortality was observed and recorded daily, until 50% mortality was observed in negative control group which challenged with V. harveyi only. Results: E. hirae was able to reduce the numbers of V. harveyi after 12 hr of co-culture incubation. In addition, E. hirae was administered into the Artemia nauplii and conferred protection 6 against V. harveyi with the best survival rate at concentration of 10 -1 CFUmL (70±3.1%). The untreated group seabass larvae challenged with V. harveyi presented low survival of (16.7±3.3%), 6 -1 while fish treated with probiotic E. hirae at 10 CFUml showed significantly increased survival rates (68.3±0.9%) after challenged. The survival of healthy unchallenged fish treated with probiotic was not significantly different with the control group. The pathogen loaded also reduced in groups treated with E. hirae respectively Interpretation: E. hirae strain LAB3, a potential probiont was able to reduce the number of Vibrios and conferred protection to Artemia and seabass larvae.

Keyword: Artemia nauplii; Enterococcus hirae; Probiotic; Seabass larvae; V. harvey