Effect Of Potential Probiotic On Crassostrea Gigas Survival

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Bivalves are exposed to a constant challenge by various pathogenic and/or opportunistic bacteria naturally present in the microflora of coastal environments. Although lacking an adaptive immune system, these animals have evolved an effective mechanism for clearing invading bacteria, based upon a complex interplay between cellular and humoral defense responses. During this study we study the interaction between these bacteria and oysters and the effect of lactic acid bacteria on the number reduction of the pathogenic bacteria. Lactic acid bacteria (LAB) were isolated from Pacific Oysters (Crassostrea gigas), 55 isolates selected after their distinct phenotypic characteristics were tested with an agar well diffusion method, as described by Reinheimer and al. (1990). The bacteria chosen as pathogenic indicators were Vibrio alginolyticus (ATCC 17749; ATCC 33787), and Vibrio parahaemolyticus (ATCC 17802). The isolates that presented antagonistic activity were characterized after Gram stain, motility, indole production, spore forming, catalase and oxidase activity. Salinity tolerance was evaluated on MRS broths containing 2%, 3% and 6% NaCl. Exoenzymes production was tested on MRS agar, to which one of the following substrates was added: 0.2% [wt/vol] starch for amylase, 1% [wt/vol] skim milk for caseinase, 1% [wt/vol] Tween 80 for lipase, 5% [vol/vol] egg yolk for phospholipase (lecithinase) and 5% [vol/vol] fish blood for haemolysin (Ben Kahla-Nakbi et al. 2007). The enzymatic activities were further characterized with the API Zym System (Bio-Mérieux) as described by Papamaloni et al. (2002). Challenge test of candidate probiotics with Oysters (Crassostrea gigas): To evaluate the effect of the LAB strains on Oysters (Crassostrea gigas), tow series of six tests were applied. Each series corresponded to one LAB strain selected for the challenge: The series included six conditions of culture: (1) axenic Oysters; (2) Oysters culture with the test LAB; (3) culture with the test LAB and a commercial enrichment product; (4) simple challenge with V. parahaemolyticus; (5) challenge with VP in the presence of the test LAB; (6) challenge with VP in the presence of the test LAB and the enrichment product. The tests lasted 6 days. Concentrations of V. parahaemolyticus in oysters before and after inoculation and five oysters were randomly picked for analysis at each test time. In this study we try to summarize data on the interactions between vibrios and bivalve haemolymph. In vitro studies demonstrated antagonism against the pathogenic bacterium, Vibrio parahaemolyticus. The evidence available supports the hypothesis that persistence of

bacteria in bivalve tissues largely depends on their sensitivity to the bactericidal activity

of the haemolymph and other bacterial community present in bivalve.