

Antimicrobial Susceptibilities of *Vibrio parahaemolyticus* Isolates from Tiger Shrimps (*Penaeus monodon*) Aquaculture in Kuching, Sarawak

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ABSTRACT

The aim of this study was to isolate *Vibrio parahaemolyticus* strains in tiger shrimps, water and sediment samples of aquaculture farms in Kuching, Sarawak. Antimicrobial susceptibility pattern was compared. Shrimp culture is a very important economic activity in the world and one of the fastest growing industry in Malaysia. Problems with diseases are very common. The use of antibiotics and chemicals are thus widely used against these bacteria. There are many concern regarding the use of these chemicals in shrimp farms. Its potential impact on the development of antimicrobial resistance in the environment and human health arises. The bacterial isolation was performed using the disk diffusion method. This method involved the use of selective enrichment with alkaline peptone water and plating of the enrichment culture onto Thiosulfate Citrate Bile Sucrose. A total of 140 *V. parahaemolyticus* strains isolated from four different farms were examined for their antimicrobial resistance to 9 commonly used antimicrobials: ampicillin, gentamicin, neomycin, cephalothin, tetracycline, nalidixic acid, kanamycin, chloramphenicol and streptomycin. The most frequently encountered form of resistance were resistance to ampicillin (100%), tetracycline (60%) and nalidixic acid (37.5%). The samples were totally susceptible to gentamicin and chloramphenicol. Low levels of resistance of less than 30% were demonstrated in the other antimicrobial agents. The Multiple Antibiotic Resistance (MAR) indices were highest for tiger shrimps isolates (0.27) and low for environmental sources, water samples (0.011). The results in this study confirm that all strains were susceptible to chloramphenicol. However, the resistance towards ampicillin, tetracycline and nalidixic acid suggest that the use of antimicrobials in tiger shrimps should be stopped to overcome future resistance problem. This study revealed useful information on the resistance pattern of *V. parahaemolyticus* towards antimicrobial agents. Constant monitoring of the antibiotic resistance patterns of *V. parahaemolyticus* in the study areas should be done.

Key words: Antimicrobial agents, MAR indices, *Vibrio parahaemolyticus*, *Penaeus monodon*, aquaculture

INTRODUCTION

Aquaculture is the fastest growing food sector globally. Aquaculture already produces nearly half of the world's food fish and is forecast to increase. In the state of Sarawak, Malaysia, the tiger