

Antibiotic resistance in bacteria from shrimp farming in mangrove areas

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Abstract: Shrimp farming is a sufficiently large and mature industry to have an effective range of antimicrobial agents for most bacterial diseases in shrimp culture. However, at present, there exists great concern over the widespread use of antibiotics in aquaculture, which may result in residue of antibiotics in water and mud, and subsequently, the development of antibiotic resistance in bacteria in the environment. There is limited understanding about the effect of antibiotic residues on bacteria resistance in shrimp farming environment. Therefore, a study was conducted to investigate bacterial resistance to Norfloxacin (NFXC), Oxolinic Acid (OXLA), Trimethoprim (TMP) and Sulfamethoxazole (SMX), which were found in four shrimp farming locations in mangrove areas in Vietnam. Findings indicate that there is a relatively high incidence of bacteria resistance to these antibiotics observed in most of the studied sites, particularly to antibiotics with concentration of 0.1 µg/ml. Yet the relation between concentration of antibiotic residues and incidence of antibiotic resistance is not clearly defined. Among individual antibiotics, the incidence of resistance to TMP and SMX was higher than the others. Identification of bacteria isolated from mud samples by DNA analyzer shows that *Bacillus* and *Vibrio* are predominant among bacteria resistant to the antibiotics. The result of the study also indicates that these antibiotics in media degraded more rapidly due to the presence of resistant bacteria. © 2005 Elsevier B.V. All rights reserved.

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