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Multiple antibiotic resistance in heterotrophic bacteria isolated from fish farms fed with chicken slaughter waste

K. AHAMED BASHA*, K.A. NARSIA, G.K. SIVARAMAN, V. MURUGADAS, N. RANJITH KUMAR, K. RESHMI, M.M. PRASAD

ICAR-Central Institute of Fisheries Technology, Kochi, Kerala, India; *ahamedfishco@gmail.com

Antibiotics were one of the successful prophylactic and therapeutic agents used against bacterial infections. Currently, chicken waste generated from the slaughter house has turned out to be an alternative low cost feed supplementation source to the cultured fishes such as Pangasius and Redbelly fish species. Antibiotic residues present in chicken feathers, intestine and inedible organs act as another potential driver for bioaccumulation of antibiotics in farmed fishes. Entry of various antibiotics through poultry waste into the aquaculture farms can lead to the emergence of antibiotic resistant bacteria in the aquatic environment. Therefore, present study was undertaken with an objective to determine the extent of antibiotic resistance in the heterotrophic bacteria isolated from four finfish culture farms fed with chicken slaughter waste. Forty-six bacterial isolates belonging to 10 genera were isolated from sediment, water samples of aquaculture farms. The bacteria were identified as *Planococcus* sp., *Acinetobacter* sp., *Vibrio* spp., *Micrococcus* spp., *Arthrobacter* spp., *Bacillus* sp., *Lactobacillus* spp., *Staphylococcus* spp. and *Citrobacter* spp. All the isolates were screened for their susceptibility to 15 commonly used antibiotics belonging to nine major classes using disk diffusion method. The results showed that the highest resistance was observed towards ampicillin

and penicillin (82%), while the lowest resistance was for gentamicin (2.17%) and all tested isolates were susceptible to tetracyclines. The frequency of resistant isolates for aminoglycosides, phenicols, fluoroquinolones, sulfonamides, macrolides, nitrofurans and cephalothins ranged between 3.3% and 15.9%. The multiple antibiotic resistant (MAR) index of the isolates tested ranged between 0 and 0.4. This study reported that most of isolates showed resistance to Beta-lactam antibiotics such as ampicillin and penicillin indicating the presence of resistance genes in aqua farms. Stringent regulations are essential for the appropriate usage of antibiotics and continuous monitoring of antibiotic resistance should be mandatory for sustainable aquaculture production.

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Haemolymph of healthy *Doclea rissoni*: Pool for *Vibrionaceae*?

V. ANUSREE NAIR*, C.J. PADAMADAN, D. DRISYA, K.J. RESHMA, T.G. SUMITHRA, T.G. KISHOR, N.K. SANIL

ICAR-Central Marine Fisheries Research Institute, Kochi, Kerala, India; *anuadithya2004@gmail.com

Despite the years of extensive studies on etiological agents, epidemiological data on various diseases in marine ecosystem remains mysterious. Scarcity of baseline information on normal microflora of marine animals challenges the research in assessing the relative importance of each animal in disease transmission. Spider crabs are well known for their tolerance to various pollutants. Nevertheless, microbiology of their circulatory systems and their role in disease transmission to human and aquatic animals are unknown. Therefore, an objective was formulated to characterize the