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Detection and antibiotic resistance of Gram negative enteric isolates from green sea turtles (*Chelonia mydas*) in Great Barrier Reef, Australia

Mohammad Shamim Ahasan, Jackie Picard and **Ellen Ariel**
James Cook University, Australia

Gastrointestinal disorders are one of the identified threats for mortality of endangered green turtle populations in rehabilitation centres. In most cases, accurate diagnosis is difficult and broad-spectrum antibiotics are used for treatment. This study identified and measured the antibiotic resistance of intestinal *Enterobacteriaceae* that were isolated from green sea turtles in northern Great Barrier Reef, Australia. Deep cloacal swabs were taken aseptically from 76 green turtles ranging from juvenile to adult from different locations including rehabilitation centers between June 2015 and January 2016. A total of 173 out of 371 Gram negative bacterial isolates were identified as *Enterobacteriaceae* using culture dependent phenotypic, biochemical and molecular techniques. The resistance against 12 antimicrobial agents belonging to 5 different antibiotic classes was determined using the broth microdilution inhibition (MIC) technique. 18 different species were identified that represent 13 different genera of *Enterobacteriaceae*. The dominant isolates were *Citrobacter* (18.5%), *Edwardsiella* (17.92%) and *Escherichia* (13.29%). The other *Enterobacteriaceae* members include *Salmonella, Proteus, Klebsiella, Enterobacter, Serratia, Morganella, Providencia, Pantoea, Cronobacter* and *Raoultella*. The isolates showed highest resistance to beta lactam antibiotics (86.13%) followed by quinolone derivatives (49.13%), aminoglycosides (47.98%), chloramphenicol (18.50%) and potentiated sulphonamides (7.51%) respectively. 27.17% isolates were identified exhibited multidrug resistance. These included *Escherichia, Klebsiella, Citrobacter* and *Proteus*. Isolates obtained from rehabilitation centers were significantly resistant ($p<0.05$) to the antibiotics except gentamicin, streptomycin and potentiated sulfonamides. The environmental isolates recovered from the turtles of Cockle Bay and Ollera Beach showed significant ($P<0.05$) resistance to ceftiofur. The findings of this study demonstrate that enteric bacterial flora of green sea turtles is composed of a wide spectrum of *Enterobacteriaceae* including several potential zoonotic pathogens with multiple drug resistance. These findings indicate that in the future, it may be important to investigate ways to reduce the level of multi-resistant *Enterobacteriaceae* in rehabilitated turtles before they are released back into the Ocean.

Biography

Mohammad Shamim Ahasan is currently pursuing his PhD at James Cook University, Australia. He has completed his MS in Tropical Animal Health from Institute of Tropical Medicine, Belgium. He is working as an Assistant Professor (in deputation) in the Faculty of Veterinary and Animal Sciences under Hajee Mohammad Danesh Science and Technology University, Bangladesh. He has published more than 15 articles in reputed journals.

mdshamim.ahasan@my.jcu.edu.au

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