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An epidemic of *Aeromonas hydrophila* in catfish: Has an emerging bacterial pathogen been introduced via invasive carp?

Mohammad Jahangir Hossain Auburn University, USA

A eromonas hydrophila is the causative agent of motile aeromonad septicemia (MAS) in fish. A recent epidemic of MAS in farmed catfish in the Southeastern United States has caused the loss of over 10 million pounds of market-sized fish since 2009. A collection of 13 epidemic and non-epidemic *A. hydrophila* strains was sequenced and 54 genomic regions unique to epidemic strains were identified. Several predicted functions, including myo-inositol utilization and prophages, were uniquely present in all epidemic strains. Interestingly, only one *A. hydrophila* strain in GenBank was similar to epidemic strains, and this strain ZC1 was isolated from a diseased grass carp in China. Genome sequences from strain ZC1 indicate that 52 out of 54 epidemic-associated genome regions are also present in ZC1. A phylogenetic analysis based on seven house-keeping genes showed that the epidemic strains share a very high degree of homology (>99%) and share <74% homology with non-epidemic strains. The ZC1 strain shares > 92% homology to epidemic *A. hydrophila* strains, suggesting that these strains share a common origin. All epidemic isolates, including ZC1, were able to grow on myo-inositol as a sole carbon source and this discriminatory phenotype can be used as a diagnostic. From this study, it can be concluded that *A. hydrophila* that is highly virulent in fish species.

Biography

Mohammad Jahangir Hossain has completed his Ph.D. in Microbiology at Auburn University and is conducting his postdoctoral studies at the Department of Biological Sciences at Auburn University. He has published more than 6 papers in peer-reviewed journals. He is currently conducting research to understand the emerging nature of epidemic *Aeromonashydrophila* strains involved in epidemic outbreak in channel catfish.

mjh0007@tigermail.auburn.edu