

Community structure and spatial distribution of anaerobic ammonium oxidation (anammox) bacteria in the sediments of chongming eastern tidal flat

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Anaerobic ammonium oxidation (anammox) is an important process in natural environments, which is known to be mediated by chemolithoautotrophic bacteria affiliated with the phylum *Planctomycetes*. The objectives of this study were to identify whether there were anammox bacteria in the surface sediments of chongming eastern tidal flat in the Yangtze estuary, and the feature of their community structure and spatial distribution. Based on the total DNA extracted from the surface sediments of Chongming eastern tidal flat, anammox-specific 16S rDNA fragments were amplified. PCR products were cloned and sequenced, and an anammox-specific 16S rDNA gene library was established. Phylogenetic tree was constructed using MEGA5 after the sequences were checked in the GenBank database. Phylogenetic analysis indicated that the clone sequences CM-L-7 and CM-L-18 had 98% identities with anammox bacteria *Candidatus "Scalindua sp."*. CM-L-13 had 94% identities with *Candidatus "Scalindua wagneri"*. CM-M-6 had 94% identities with *Candidatus "Kuenenia sp."*. CM-M-22 had 95% identities with anaerobic ammonium-oxidizing *Planctomycete* JMK-1. CM-H-15 had 94% identities with *Candidatus "Kuenenia stuttgartiensis"*. The results indicated that there were anammox bacteria in the surface sediments of chongming eastern tidal flat, but the anammox species were diverse in different tidal flats: *Candidatus "Scalindua "* was the predominant group in the low tidal flat, while *Candidatus "Kuenenia"* was the major population in the high tidal flat and the middle tidal flat. In comparison with the high and low tidal flats, the community structure of anammox bacteria was the most complicated in the middle tidal flat. A portion of the sequences were related to uncultivated bacteria outside the known anammox cluster, probably indicated that there were potential anammox bacteria in the sediments of Chongming eastern tidal flat.

Biography

Lijun Hou received his Ph.D. from East China Normal University in 2004. He ever worked with Professor Wayne Gardner at Marine Science Institute, University of Texas at Austin in 2008 and 2009. Now, he is a professor of State Key Laboratory of Estuarine and Coastal Research, China. So far, he has published more than 70 papers in reputed journals, with high impact factors.

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