THE DIVERSITY OF AMMONIUM-OXIDIZING ARCHAEA AND ANAMMOX BACTERIA IN BRAZILIAN MANGROVES SEDIMENTS

Andreote F. D.[1], A.C.F. Dias[2], R.G. Taketani[2], S.M. Tsai [2] , J. L. Azevedo[2] and I. S. Melo[1]

[1] Laboratory of Environmental Microbiology, Embrapa Environment, Jaguariuna, SP, Brazil
[2] Center for Nuclear Energy in Agriculture, University of So Paulo, Piracicaba, SP, Brazil

fdandreo@gmail.com

The ammonium processing is a key step in the nitrogen cycle, driving the further chemical transformation trough the generation of N_2. This process can occur by the ammonium oxidation, which is dependent on the oxygen availability, or by the direct conversion in N_2, which occur in anaerobic environments, performed by the anammox bacteria. Due to the stratification of the aerobic, microaerophilic and anaerobic zones, the mangroves are important areas to be used as a model in the highlightening of the ammonium processing in marine sediments. Here it is presented a survey in three mangroves located in the coastline of the So Paulo State (Brazil): i) oil-contaminated mangrove at Bertioga, ii) non-cont aminated mangrove at Bertioga, iii) non-disturbed mangrove at Ilha do Cardoso. The ammonium-oxidizing archaea and anammox bacteria community (of each sample) were subjected denaturing gradient gel electrophoresis to evaluate the diversity of each group, as well as to quantitative PCR to establish the estimated density of these microorganisms. Results have shown an abundant population of anammox bacteria, assessed by phylogenetic specific primer, in all mangroves, while the detection of the archaeal *amoA* genes was limited, with higher levels in the mangrove where the vegetation is more abundant (non-contaminated Bertioga). Concerning the diversity, the archaeal *amoA* genes has revealed a low diversity, undistinguishing the three mangroves, while the diversity of anammox bacteria has shown to be modulated in each mangrove and responsive to the oil contamination. Moreover, the samples collected closely to the oil spill harbored higher densities of anammox bacteria, possibly due to the strict anaerobiosis induced by the oil layer and the decrease of the vegetation density in this area. A tentative analysis of bacterial *amoA* genes did not detect this gene in all analyzed samples. Deciphering the ammonium processing in mangroves might shed light in the diversity of functioning microbial groups involved in this step of the nitrogen cycling. Financial support: The State of So Paulo Research Foundation (FAPESP, Brazil).

Poster A-3
MICROBES IN BIOGEOCHEMICAL CYCLES