

SEKCJA 7. NAUKI BIOLOGICZNE

ANAMMOX BACTERIA DETERMINATION IN PHENOL CONTAINING PHARMACEUTICAL EFFLUENTS

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Microorganisms that oxidize ammonia under anaerobic conditions (ANAMMOX) with the gaseous nitrogen release are the nitrogen cycle integral part in nature. Anammox microorganisms ribosomal 16S rRNA molecular studies allowed the five genera formation that were assigned to a separate Candidatus Brocadiales order of the Planctomycetia class. The anammox microorganisms study in various ecological environments with low oxygen concentration indicates these microorganisms adaptability to different pollutants.

We analyzed the active sludge sample, which was in wastewater with phenol compounds, in 1.5 liters tank. The active sludge part in the sample was 0.2 liters. Before the analysis, the sample was stored at + 4 ° C.

To detect anammox microorganisms the FISH method was used, with the specific fluorescence primers Fam-Amx-0820 (5'-AAAACCCCTCTACTTAGTGCCC-3') for the genus *Ca. Brocadia* and *Ca. Kuenenia* bacteria detection; and Fam-Kst-1275 (5'-TCGGCTTTATAGGTTTCGCA-3') for the *Kuenenia stuttgartiensis* representatives detection. The fluorescence primer Tamra-Amx-0368 (5'-CCTTCGGGCATTGCGAA-3') was used to estimate the anammox microorganisms total number in the sample.

The obtained sludge sample investigation with the FISH technique using Zeiss fluorescent microscope helped to establish and analyze the anammox bacteria microcolonies. The labeled Tamra-Amx-0368 primer use showed us the presence of 5 to 10 small anammox bacteria colonies in the active sludge. The following labeled primers use (Fam-Amx-0820 and Fam-Kst-1275) indicated that in the analyzed sample the genus *Ca. Brocadia* representatives prevailed, making approximately 70% comparing to *Kuenenia stuttgartiensis* representatives. The study using the FISH method indicated relatively low anammox bacteria amount in the active sludge sample, which poses a problem for the anammox bacteria biomass development for PCR conducting and qualitative data obtaining for analysis.

References:

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