

Characterization of legionella pneumophila populations by multi locus variable number of tandem repeats (mlva) genotyping from drinking water and biofilm in hospitals from different regions of the West Bank

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Abstract

The West Bank can be considered as a high-risk area for Legionnaires' disease (LD) due to its hot climate, intermittent water supply and roof storage of drinking water. Legionella, mostly *L. pneumophila*, are responsible for LD, a severe community-acquired and nosocomial pneumonia. So far, no extensive assessment of Legionella spp and *L. pneumophila* using cultivation in combination with molecular approaches in the West Bank has been achieved. Two years of environmental surveillance of Legionella in water and biofilm of the drinking water supply systems (DWSS) of eight hospitals was carried out. 180 *L. pneumophila* strains were isolated mostly from biofilms of the DWSS. Most of the isolates were identified as serogroup (Sg) 1 (60%) and 6 (26%), and a minor fraction pertaining to Sg 8 and 10. Multi Locus Variable number of tandem repeats Analysis using 13 loci (MLVA-8(12)) was applied as a high-resolution genotyping method and compared to the standard Sequence Based Typing (SBT). The MLVA-genotype composition showed substantial regional variability. In general, the applied MLVA-method allowed a reproducible genotyping of the isolates, was consistent with SBT but showed a higher resolution. This shows that the resolution by MLVA is advantageous for back-tracking risk sites and avoidance of outbreaks of *L. pneumophila*. Overall, our results provide important insights into the detailed population structure of *L. pneumophila* allowing for better risk assessment for DWSS.

Biography:

Ashraf R. Zayed has completed his PhD from Technical University of Braunschweig and Helmholtz Center for Infection Research (HZI) in Germany. He is the Asst. Prof. At Dept. Of Microbiol and Immunol in Arab American University AAUP, Jenin, West Bank, Palestine.

Speaker Publications:

1. "Characterization of Legionella pneumophila Populations by Multilocus Variable Number of Tandem Repeats (MLVA) Genotyping from Drinking Water and Biofilm in Hospitals from Different Regions of the West Bank"
2. "Biogeography and Environmental Drivers of Legionella pneumophila Abundance and Genotype Composition across the West Bank: Relevance of a Genotype-Based Ecology for Understanding Legionella Occurrence"

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