

Analysis of Actinobacteria from mould-colonized water damaged building material

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Abstract

Mould-colonized water damaged building materials are frequently co-colonized by actinomycetes. Here, we report the results of the analyses of Actinobacteria on different wall materials from water damaged buildings obtained by both cultivation-dependent and cultivation-independent methods. Actinobacteria were detected in all but one of the investigated materials by both methods. The detected concentrations of Actinobacteria ranged between 1.8×10^4 and 7.6×10^7 CFUg⁻¹ of investigated material. A total of 265 isolates from 17 materials could be assigned to 31 different genera of the class Actinobacteria on the basis of 16S rRNA gene sequence analyses. On the basis of the cultivation-independent approach, 16S rRNA gene inserts of 800 clones (50%) were assigned to 47 different genera. Representatives of the genera *Streptomyces*, *Amycolatopsis*, *Nocardiopsis*, *Saccharopolyspora*, *Promicromonospora*, and *Pseudonocardia* were found most frequently. The results derived from both methods indicated a high abundance and variety of Actinobacteria in water damaged buildings. Four bioaerosol samples were investigated by the cultivation-based approach in order to compare the communities of Actinobacteria in building material and associated air samples. A comparison of the detected genera of bioaerosol samples with those directly obtained from material samples resulted in a congruent finding of 9 of the overall 35 detected genera (25%), whereas four genera were only detected in bioaerosol samples.

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