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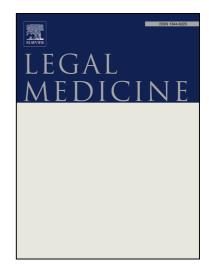
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Environmental microbiology: perspectives for legal and occupational medicine

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Abstract

The analysis of microorganism population is crucial in several medical fields. This is especially true in legal and occupational medicine, where the specialist can be asked to perform an evaluation of several environmental matrices. In these two medical fields an accurate microbiological analysis is part of a wide process aimed to the definition of the interactions between human beings and environment.

In legal medicine it is important to deserve attention to the identification of microbiological traces in order to better understand past events, while in occupational and preventive medicine the microbiological evaluation of environmental samples is crucial for an effective risk management and the definition of safety procedures. The achievement of these objectives requires the comprehension of microbial biodiversity and not only the identification of few biomarkers. In the present paper, the complexity of this process is highlighted through the presentation of typical scenarios where microorganism population analyses are relevant in legal medicine and occupational medicine.

The similarities between the microbiological approach in legal and occupational medicine lead to the sharing of laboratory approaches. A description of technological evolution shows how new protocols and procedures are supporting a wider microbiological comprehension of specimens. The development of molecular tools has opened new opportunities, but it has underlined the need for the implementation of new standardized procedures dedicated to these medical fields, where science and medicine interact with the law. In addition, the rapid evolution of massive parallel sequencing technologies requires the implementation of new bioinformatic tools with a user-friendly interface. Keywords: microbiota, forensic, occupational health, NGS, environmental microbiology, molecular

tools

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