Abstract

Introduction. Manipulating Mycobacterium tuberculosis clinical specimens and cultures represents a risk factor for laboratory personnel. One of the processes that requires high concentrations of microorganisms is DNA extraction for molecular procedures. Pulmonary tuberculosis cases have occurred among professionals in charge of molecular procedures that require manipulation of massive quantities of microorganisms. This has prompted research studies on biosafety aspects of extraction protocols; however, as yet, no consensus has been reached regarding risks associated with the process. Objective. The biosafety was evaluated for the DNA extraction protocol of van Soolingen, et al. 2002 by determining M. tuberculosis viability at each process stage. Materials and methods. Eight hundred eighty cultures were grown from 220 M. tuberculosis clinical isolates that had been processed through the first three DNA extraction stages. Molecular identifications of positive cultures used a PCR isolation of a fragment of the heat shock protein PRA-hsp65 and examination of its restriction enzyme profile (spoligotyping). Results. Growth was seen in one culture with one of the procedures used. The molecular characterization did not correspond to the initially analyzed isolate, and therefore was deduced to be the product of a cross-contamination. Conclusion. The DNA extraction protocol, as described by van Soolingen, et al. 2002 and as implemented at the Instituto Nacional de Salud, was established to be safe for laboratory personnel as well as for the environment.

Keywords

Mycobacterium tuberculosis, exposure to biological agents, DNA, laboratory techniques, DNA procedures.