COMPARISON OF ZIEHL-NEELSEN STAIN, CULTURE MEDIA OF LOEWESTEIN-JENSEN, MB-REDOX AND MGIT WITH PCR FOR RECOVERY OF *MYCOBACTERIUM TUBERCULOSIS*

Asimina Fylaktou, B. Koulourida, M. Moskophidis
Department of Microbiology, Biochemistry and Virology
General Hospital Papageorgiou, Thessaloniki, Greece
E-mail: iosfyl@med.auth.gr

Purpose: Our purpose was to compare the Ziehl-Neelsen stain for acid-fast bacteria, the culture media of Loewenstein-Jensen, MB (Mycobacterium)-Redox and MGIT (Mycobacteria Growth Indicator Tube) with a conventional PCR for recovery of *Mycobacterium tuberculosis* from pulmonal and extrapulmonal specimens.

Methods: A total of 1552 specimens (1234 pulmonary and 318 extrapulmonary) were investigated for recovery of *M. tuberculosis*. All specimens were processed with acetyl-cystein and sodium hydroxide method using the MycoPrep kit. They were inoculated in three types of culture media: in the solid medium Loewestein-Jensen and in the liquid media MB-Redox and MGIT. After the processing of specimens before and after their inoculation, on days 5^{th}, 10^{th}, 20^{th} and 40^{th} smears were prepared for the presence of acid-fast bacteria using the Ziehl-Neelsen stain. *M. tuberculosis* in the colonies on solid medium or in sediment of liquid media was identified using a conventional in house PCR by amplifying of an 123-bp sequence of the specific repetitive insertion sequence IS6110.

Results: Of the 1,552 cultured specimens for mycobacteria 99 (6.4%) were positive according to the PCR. 78 (5.0%) isolates of them were recovered with Loewenstein-Jensen, whereas 97 (6.2%) were isolated with both systems MB-Redox and MGIT. In 49 (3.2%) of all specimens the direct Ziehl-Neelsen stain was positive. In comparison with the positive results of PCR (100%) the direct Ziehl-Neelsen stain was positive in 49,5%, the Loewenstein-Jensen culture in 78.8% and the MB-Redox and MGIT culture in 97.9%. The mean time of mycobacteria growth in Loewestein-Jensen was 24 days and 16 and 12 days in MB-Redox and MGIT respectively.

Conclusion: Tuberculosis despite the prevention measures remains a serious health problem in Greece. Conventional PCR is a sensitive, cheap and specific method which in combination with culture in the liquid media MB-Redox and MGIT permits the prompt isolation and identification of *M. tuberculosis*.