

supernatants were tested for Th1/Th2 cytokine using the Cytometric Bead Array system. All Th1/Th2 cytokines were significantly elevated (Mann Whitney U test $p < 0.01$) in PTB compared to EC TST+. Spearman Rank analysis was carried out to determine the relationship between Th1 and Th2 cytokines. Differential association between Th1 and Th2 cytokines in the two groups was observed with IFN γ Vs IL6 (PTB, $\rho = -0.023$, $p > 0.1$; EC TST+, $\rho = 0.665$, $p = 0.003$) and between IL2 Vs IL4 (PTB, $\rho = -0.419$, $p = 0.083$; EC TST+, $\rho = 0.668$, $p = 0.002$). Differential endogenous activation of Th1/Th2 cytokines in pulmonary tuberculosis and healthy TST+ community controls may have important implications with respect to disease pathogenesis and protection.

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THE USE OF MOLECULAR TECHNIQUES FOR THE IDENTIFICATION OF MYCOBACTERIUM BOVIS

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Mycobacterium bovis, member of *M. tuberculosis* complex (MTBC) causes tuberculosis (TB) mainly in cattle but has a broad host range and causes disease similar to that caused by *M. tuberculosis* in humans. Identification of *M. bovis* traditionally has been based on phenotypic characteristics and biochemical properties. Several molecular methods have been developed for the identification of *M. bovis* including DNA sequence variations in the direct repeat region of MTBC complex -spoligotyping or single nucleotide polymorphisms (SNPs) in the *oxyR* gene or be differentiated by large sequence polymorphisms or regions of difference (RD). The objective of this study was to determine a molecular method for the Detection of *M. bovis* from cattle. 17 suspected lesions from positive reactors (cattle) from Comparative tuberculin test were cultivated on LJ medium containing pyruvate. Isolates were identified using biochemical assays and PCR using Insertion sequence IS6110, Allele-specific(*oxyR*) and Spoligotyping Three(16%) of the isolates gave phenotypic properties were characteristic of (MTBC) while the remaining three were identified as non tuberculosis mycobacteria Insertion sequence of isolates gave 50% identification while with *oxyR* 3(50%) were identified as *M. tuberculosis*. Spoligotyping identified *Mycobacterium tuberculosis* Ghana, *Mycobacterium africanum*, while sequencing of the 16rRNA identified two non tuberculosis bacteria - *Mycobacterium. flavescens* and *Mycobacterium. moriokaense* which have been known to infect animals example cattle presenting histological form similar to those presented in cattle infected with *Mycobacterium bovis*. As far as can be gathered from literature this is the first time *Mycobacterium tuberculosis* in cattle has been identified in Ghana through molecular typing of appropriate isolates.

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CAN JOB TITLES BE PREDICTORS FOR RECENT ONSET LATENT TUBERCULOSIS IN HEALTH CARE WORKERS?

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Latent tuberculosis (LTB) is the stage of *Mycobacterium tuberculosis* that is asymptomatic, dormant and non-contagious. Although health care workers are considered as high risk for LTB, it has been debating if job

types are associated with the risk of LTB. In addition, there is limited data of this issue on the recent onset LTB. We determined the association of job types and tuberculin conversion or recent onset latent tuberculosis in healthcare workers in an endemic area of tuberculosis. A case-control study was done at Srinagarind hospital, Thailand. Cases were subjects with tuberculin conversion, while controls were subjects with negative results of tuberculin skin test (TST) in two consecutive years. There were 1,025 subjects completed two consecutive TST during 2001-2009. The incidence rate of tuberculin conversion was 19.8% or 203 subjects. In a multivariate model, the only three significant factors for tuberculin conversion were male gender, having BCG scar, and job types. Only nurses, nurse assistants, and workers were significantly associated with tuberculin conversion with adjusted odds ratio [95% confidence interval] of 2.3 [1.3-4.1], 2.3 [1.3-4.7], and 3.0 [1.8-5.0], respectively. Tuberculosis infection control program should be emphasized in those job types of healthcare workers who are at risk.

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COMPARISON OF DIFFERENT MOLECULAR AND CULTURE-BASED STOOL TECHNIQUES IN PULMONARY TUBERCULOSIS DIAGNOSIS

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The diagnosis of pulmonary tuberculosis (TB) is difficult in patients unable to provide sputum. Most sputum is swallowed and we evaluated molecular and culture-based tests for detecting *M. tuberculosis* from swallowed sputum in stool for the diagnosis of pulmonary TB. Stool samples from adults with suspected and proven pulmonary TB, prior to and during treatment were tested. The diagnostic performance of the following techniques was compared: an IS6110 nested polymerase chain reaction (PCR); sputum smear fluorescence microscopy with centrifuge concentration and Auramine staining; the Microscopic-Observation Drug-Susceptibility (MODS) broth culture technique; culture on antibiotic-enriched selective Middlebrook 7H10 thin-layer agar (TLA); and culture on conventional Lowenstein-Jensen (LJ) solid culture medium. Stool was decontaminated with the NALC-NaOH technique as used for sputum. Of 1,086 stool samples, 129 were culture positive. For these samples, the diagnostic sensitivity of MODS was 92%, higher than LJ (81%, $P = 0.02$), PCR (75%, $P < 0.01$), all of which were more sensitive than TLA 59%, $P < 0.01$ and only 40% were microscopy positive. Considering the 934 samples with results for all tests, PCR was positive for 19% and culture 12%: MODS in 9.2%, LJ in 7.3%, TLA in 6.0% and microscopy in 5.3% (all comparisons $P < 0.01$). Contamination caused test failure for 1.8% of MODS tests, 3.4% of TLA and significantly more for LJ cultures (15.2%, $P < 0.01$). 567 of the PCR were performed after two DNA extraction techniques and positivity was significantly more frequent with commercial spin columns (Qiagen), than the in-house Chelex technique (16% vs 12%, $P = 0.03$). In conclusion, PCR of stool specimens has higher sensitivity than culture for the diagnosis of pulmonary TB. Qiagen columns performed better than Chelex extraction. MODS had the highest sensitivity and lowest contamination rates among the three culture techniques.