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Potential application of the improved ESAT-6 and CFP-10 peptide-based cytokine flow cytometric assay for bovine tuberculosis

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Introduction: Control of bovine tuberculosis (bTB) continues to be a problem world-wide because of difficulties in identifying infected animals at all stages of infection. The use of the IFN-γ release assays (IGRA) as an ancillary test with the tuberculin skin tests has improved the ability to identify infected animals. However, infected animals may still be missed.

Objective: The objective of the present study was to evaluate a rapid flow-cytometric approach based on intracellular cytokine staining as an alternative readout.

Materials & Methods: Antigen-specific cells producing IFN-γ were identified after a 6 hour stimulation with PPD-B, PPD-A and ESAT-6/CFP-10. Defined groups of animals naturally infected with *Mycobacterium bovis (Mbv)*, animals infected with non-tuberculous mycobacteria (NTM) and uninfected control animals were analyzed to evaluate the sensitivity and specificity of the optimized assay. Both antemortem and postmortem diagnostic tests were carried out to verify the status of infection.

Results: We show that IFN-γ is induced in T cells from whole blood samples from cattle infected with Mbv 6 hours post stimulation with PPD-B, PPD-A and ESAT-6/CFP-10, whereas non-infected animals did not respond. Four color flow cytometric analysis demonstrated responding cells were CD45R0+CD69+CD4+ memory T cells. Moreover, induction of IFN-γ in response to ESAT-6/CFP-10 can be used to distinguish between cattle infected with *Mbv* and cattle exposed to NTM.

Conclusion: Although further studies are needed, the results indicate that detection of intracellular IFN-γ may represent an important alternative approach with the potential for improved detection of cattle secreting IFN-γ below levels of detection in culture medium.

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Effect of highly active antiretroviral therapy on renal function parameters of HIV1 patients in Ebonyi State, Southeastern Nigeria

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While the treatment of HIV infected person with anti retroviral is receiving wider attention. The side effect of these drugs are continually manifesting among some recipients especially in rural poor setting. This may not be unconnected with concomitant administration of other drugs such as antimalarial agents. One hundred and forty seven adult patients with mean age of 31 years comprising of 65 females and 82 males were enlisted for this study. This research was carried in the Federal Teaching Hospital Abakaliki where the subjects were registered and placed on antiretroviral therapy and evaluated for eighteen months with respect for renal function parameters such as creatinine and urea in correlation with CD4 T-cell count. Personnel factor such as age, sex and social status were also considered. The result revealed that 42 (28%) patients showed elevated serum urea and creatinine values above normal range as indicated by mean values of 71.6mg/dl and 3.92mg/dl from initial values of 50.71mg/dl and 1.24mg/dl at baseline respectively in the 18th month respectively the value are significant as $p<0.05$ and had a correlations coefficient of .975 .829 at 0.01 level with CD4+ T-cell. Also the CD4 T-cell count increased from mean value of 81±16 cell/µl to 521±27 cell/µl at 18th months. The result shows that while the antiretroviral therapy may show good prognosis when considered on the basis of CD4+ T-cell turn over the impact of the renal function is significantly deleterious. There is therefore the need for proper monitoring of patients on antiretroviral therapy for adverse effect on renal function.

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