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Evaluation of the agreement between comparative intra-dermal tuberculin and gamma interferon tests for the diagnosis of bovine tuberculosis in Ethiopia

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The control of bovine tuberculosis is difficult in developing countries because of the high cost of a sustainable testing programs and the lack of a diagnostic assays with high sensitivity and specificity to detect animals at all stages of infection. A cross-sectional study was conducted to evaluate the test agreement between comparative intra-dermal tuberculin test (CIDT) and interferon gamma (INF- γ) tests for the diagnosis of bovine tuberculosis (BTB) at Holeta, Ethiopia from December, 2012 to May, 2013. In this study, a total of 114 cattles were tested both by CIDT and INF- γ tests. The agreement between INF- γ (PPDB-PPDA) and CIDT tests was fair ($k=0.288$). On the other hand, a moderate agreement ($k=0.44$) was observed between INF- γ test (PPDB-PPDA) and INF- γ test (ESAT6/CFP10-Nil). The difference between reaction sizes at the bovine PPD injection site and the avian PPD injection site was significant (t test; $P<0.001$). While there was no significance difference (t test; $P>0.05$) in INF- γ response to bovine PPD and avian PPD. INF- γ response was stronger for ESAT6-CFP10 protein cocktails compared to PPD (B-A). Logistic regression analysis showed a significant association of animal age group with the responses of CIDT and INF γ tests. In conclusion, the fair agreement between the CIDT and INF- γ tests could indicate that the two tests are not completely overlapping and thus in addition to detecting a similar stage of the disease they also detect the different stages of the disease. Hence, it is advisable to use the two tests in combination.

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