

TITLE: EVALUATION OF THE ASSOCIATION BETWEEN ELISA AND COMPARATIVE INTRADERMAL TUBERCULIN TEST IN THE DIAGNOSIS OF BOVINE TUBERCULOSIS

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ABSTRACT:

Bovine tuberculosis (bTB) is an infectious disease caused by *Mycobacterium bovis*, which affects many domestic species, especially cattle and buffalo, and wildlife. It causes major economic losses and also represents a threat to public health. Although intradermal testing is the standard recommended method for the diagnosis of *M. bovis* infected animals, there are concerns regarding sensitivity. Therefore, infected cattle may be missed during routine surveillance operations, providing the potential for a reservoir of undetected disease within herds. Serological tests to detect antibody response may also constitute an alternative for screening cattle for *M. bovis* infections, especially in combination with intradermal tests. In this study, we have evaluated the association of an indirect ELISA with a recombinant chimera of MPB70/MPB83/ESAT-6 and comparative intradermal tuberculin test (CITT) to detect *M. bovis* infected cattle. Two groups of animals were included A) 39 animals from a beef cattle herd, not accredited for bTB, which was slaughtered for commercial purposes; and B) 53 animals from three dairy herds, which were depopulated in consequence of high bTB prevalence. All the animals were tested by CITT and ELISA. After slaughtering, lymph nodes (head, thorax and mesenteric) were cultured for *M. bovis* in Stonebrink medium, and the colonies were confirmed for *M. bovis* by PCR targeting RD4. Nine *M. bovis* isolates of the herd B were genotyped by 24-loci MIRU-VNTR, showing a clonal pattern. In the analysis of the 92 animals, the CITT detected 14 (15.2%) positive animals and demonstrated seven (7.6%) inconclusive results. In the group of bacteriological culture-confirmed *M. bovis* infected cattle, CITT detected 11/39 (28.2%) animals as positive. In the group of animals with negative bacteriological culture, CITT detected 47/53 (88.7%) animals as negative. Out of the 92 animals included in this study, 44 (47.8%) were positive in the ELISA. In the analysis of the group of 39 animals with positive bacteriological cultures, the ELISA detected 31 (79.5%) as positive. In the group of 53 animals with negative bacteriological culture, ELISA detected 40 (75.5%) as negative. The association of CITT and ELISA detected as positive 33 out of the 39 animals with positive in the bacteriological culture (84.6%). In this study, the sensitivity of the CITT was low and the association with the ELISA increased significantly the detection of the *M. bovis* infected cattle.

Keywords: ELISA, bovine tuberculosis, comparative intradermal tuberculin test.

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