Screening of recombinant proteins as antigens in indirect ELISA for diagnosis of bovine tuberculosis - Souza I.I.[a], Melo E.S.P.[a], Ramos C.A.N.[b], Farias T.A.[b], Osório A.L.A.R.[c], Jorge K.S.G.[c], Vidal C.E.S.[d], Silva A.S.[e], Silva M.R.[f], Pellegrin A.O.[g], Araújo F.R.[h]

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Bovine tuberculosis (BTB) is an important infectious disease caused by *Mycobacterium bovis*, which is responsible for considerable economic losses. This disease constitutes a serious public health problem. Control programs in most countries, including Brazil, are based on the identification and slaughter of infected animals, as defined by the skin tuberculin test, which has its constraints. Skin tests require containment of the animals on two occasions with a 72-h interval for measuring the thickness of the skin fold. Management is hampered in herds raised extensively or on farms without adequate facilities, which is a common situation in developing countries. This difficulty is probably one of the main reasons for why epidemiological surveys of BTB planned in the eradication program in Brazil are in a less advanced stage than those for brucellosis. Therefore, ancillary methods are needed for the diagnosis of bovine tuberculosis. In the present study, the recombinant proteins CFP-10, ESAT-6, Mb0143, MPB83, PE5, PE13, TB10.4, TB15.3 and a chimera of ESAT-6/MPB70/MPB83 peptides were tested as ELISA antigens for the diagnosis of BTB. The proteins were produced in *Escherichia coli*, purified and tested in ELISAs with sera from 126 cattle having tested negative in the comparative intradermal tuberculin test (CITT) and 107 sera from cattle having tested positive in the CITT. Among the proteins tested, only the ESAT-6/MPB70/MPB83 chimera demonstrated satisfactory agreement with the CITT (kappa index: 0.688), reflecting in 83.2% sensitivity and 86.5% specificity. An antibody-based assay, such as ELISA with the ESAT-6/MPB70/MPB83 chimera, offers the possibility of identifying BTB positive herds using sera collected for other epidemiological studies, such as for brucellosis, prior to tuberculin skin tests, thereby increasing the diagnostic coverage. This is another useful aspect in the possible identification of cattle in advanced stages of tuberculosis with false-negative results on the skin test due to anergy.

Key-words: serology, ELISA, recombinant proteins, *Mycobacterium bovis*, cattle

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