

Shuralev E.A., Della Bella C., Mukminov M.N., Khammadox N.I., Khaertynov K.S., Kaempfer S., D'Ellos M.M., Singh M. "Liodetect® Animal Tb" Rapid Test as a Serological Ancillary Test to Tuberculin Skin Test Can Significantly Improve Overall Sensitivity with High Specificity for the Routine Screening of Bovine Tuberculosis in Cattle Herds // SSRN. – 2022. – TUBE-D-22-00015. DOI: 10.2139/ssrn.4019594

https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4019594

Keywords: Animal tuberculosis, Cattle, serology rapid test, Point-Of-Care, Lateral-Flow-Test

Abstract

Lateral flow technology is an easy and cheap serological tool for the screening of animal Tuberculosis, exploitable as Point Of Care test. The LIOdetect®Animal TB is a rapid test for the diagnosis of bovine tuberculosis, containing recombinant MPB83 and MPB70 of *Mycobacterium bovis* and a highly purified cell wall antigen. The rapid assay was tested on sera from 114 healthy cattles and 74 animals from herd with confirmed *M. bovis* tuberculosis . Serum with antibodies to one or all of the antigens will show one or more pink-purple bands in the test zone of the test card within 15 minutes. All the TB-free animals showed negative results (100% of specificity); for infected animals, when reactions to either of the 3 bands were taken into account, the test displays a variable sensitivity reaching upto to 95.8 %. Considering the skin test negative infected animals, the LIOdetect®Animal TB rapid test could be an ancillary tool to detect false negative subjects emerged with the tuberculin skin test.

In order to compare the LIOdetect®Animal TB rapid test response with another serological assay, the new in-house LIONEX MPB70 - MPB83 ELISA kit was tested on the same serum samples from 54 healthy and 36 *M. bovis* infected animals. The best cut-off of the ELISA test was set for a sensitivity of 78% and a specificity of 89%. A substantial concordance between the two tests was found for all the results obtained in the 90 tested animals.

Highlights

- LIOdetect®Animal TB rapid test produces consistent and highly specific results in bovine tuberculosis.
- LIOdetect®Animal TB rapid test as an ancillary test to tuberculin skin test can significantly improve diagnosis of bovine tuberculosis.
- LIOdetect®Animal TB rapid test can be used as a Point-Of-Care-Test (POCT).
- LIOdetect®Animal TB rapid test is a cost effective, cheap test highly suitable for developing countries.