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SEROLOGICAL, BACTERIOLOGICAL, AND MOLECULAR INVESTIGATION OF BRUCELLOSIS IN BOVINE IN FOUR EGYPTIAN GOVERNORATES

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For the aim of validation, 347 known positive and negative serum samples of large ruminants with a history of *Brucella melitensis* infection were selected. The highest relative sensitivity was achieved by the buffer acidified plate agglutination test (BAPA). The assessed kappa (κ) agreement in both species indicated a substantial agreement ($p < 0.05$) in case of the BAPA, Rose Bengal plate (RBPT), indirect ELISA (iELISA) and rivanol (Riv. T) tests. According to the data obtained from the receiver operating characteristic curves (ROCs), the area under the ROCs and diagnostic odd ratio, the diagnostic performance of serological tests in cattle was arranged in descending order as follows; BAPAT, Riv.T, RBPT, iELISA, EDTA-modified micro-agglutination test (EDTA-mMAT) and MAT. The equivalent picture in buffaloes was, Riv.T, RBPT, BAPAT, iELISA, EDTA-mMAT and MAT. Eleven *Brucella* field isolates were recovered, whereas four isolates were recognized as *Brucella abortus* biovar 1 from cattle and seven as *Brucella melitensis* biovar 3 from cattle and buffaloes using phenotypic bacteriological typing and molecular speciation (Bruce-ladder PCR). As a result of better diagnostic performance offered by EDTA-mMAT over MAT under investigation, the authors recommended switching from MAT version locally adopted to EDTA-mMAT, and to a limited extent, Riv.T could be used to confirm reactors identified by screening tests. As a result of the frequent isolation of *Brucella melitensis* from the liver of slaughtered seropositive ruminants, it is necessary to amend the ministerial decree No. 1329 of 1999 to contain an explicit clause of liver condemnation as it poses hazards on public health.

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