ADVANCED DIAGNOSTIC METHODS FOR HUMAN BRUCELLOSIS

Taleski V, Kungulovski Dz

Institute of Biology, Faculty of Natural Sciences and Mathematics, University St's Cyril and Methodius, Skopje, Macedonia

Brucellosis is a typical zoonotic disease caused by organisms of genus *brucella*. Humans become infected by ingestion of animal food products, direct contact with infected animals or inhalation of infectious aerosols. Variable symptoms, sub-clinical and atypical infections make diagnosis of human brucellosis difficult.
Objective of this paper is to evaluate specificity and sensitivity of different diagnostic methods, on large number of samples, in patients at different stages of the disease.
Different methods were implemented in our lab, as screening or confirmatory tests, some in studies some as a routine diagnostic test, such are:
- Culture;
- Classical serological tests: (Rose Bengal test, Standard tube test-Wright test; Antihuman globulin test (Coombs);
- Indirect enzyme immunoassay (ELISA);
- Competitive enzyme immunoassay (c-ELISA);
- Fluorescent polarization assay (FPA);
- PCR-based assays from peripheral blood samples.
Our comparative studies showed:
- Sensitivity of: culture 17,7%, RBT 98%, SAT 82%, Coombs 89%, c-ELISA 98%, ELISA 98%, FPA 86 %, R.A.P.I.D PCR-56%, and
- Specificity of: culture 100%, RBT 97%, SAT 98%, Coombs 100%, c-ELISA 98%, ELISA 100%, FPA 92%, and R.A.P.I.D PCR 100%.
Sensitivity and specificity of ELISA showed statistically significant superiority in comparison with classical serological tests. FPA and c-ELISA are promising tests but needs further studies on larger number of human samples.
More effective PCR detection of *brucella* DNA from blood samples requires sampling in the beginning of the disease (bacteraemia still present), concentration techniques or larger volumes of blood for processing.
PCR allows overcoming problems of bacterial isolation and identification.