



Brucellosis: An updated review of the disease

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ABSTRACT

Brucellosis is a chronic infectious disease caused by small, non-motile, non-sporing, gram-negative, facultative intracellular coccobacilli of the genus *Brucella*. This disease may affect a range of different mammals including cattle, buffalo, sheep, goat, swine, rodents, man and marine mammals. It is a major bacterial zoonosis of global public health importance. In most of the animal species, the disease primarily affects the reproductive system with concomitant loss in productivity. Both humoral and cellular immune responses are involved in *Brucella* infection. Clinical signs of *Brucella* infection are non-pathognomonic and thus diagnosis of the disease is mainly dependent on laboratory tests. The conventional tests, viz. Rose Bengal plate agglutination test (RBPT), serum tube agglutination test (SAT) and complement fixation test (CFT) are commonly used. Isolation is still the gold standard. Other commonly used tests are enzyme linked immunosorbent assay (ELISA), polymerase chain reaction (PCR), native hapten (NH) gel precipitation tests, brucellin skin test and fluorescence polarization assay (FPA).

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Table 1. Tests used for diagnosis of brucellosis

Name	of	testm	References
2-mercaptoethanol test (2 ME)	Saravi <i>et al.</i> (1995)	and Stemshorn <i>et al.</i> (1985)	
Agar gel immunodiffusion test (AGID)	Lord <i>et al.</i> (1989)		
Allergic skin test (AST)	Pouillot <i>et al.</i> (1997)	and Saegerman <i>et al.</i> (1999)	
Blood fluorescence polarization assay (bld FPA)	Nielsen <i>et al.</i> (2002)		
Buffered antigen plate agglutination test (BPAT)	Fosgate <i>et al.</i> (2002)	and Saravi <i>et al.</i> (1995)	
Bulk milk tank fluorescence polarisation assay (bmFPA)	Gall <i>et al.</i> (2002)		
Card test	Fosgate <i>et al.</i> (2002)	and Stemshorn <i>et al.</i> (1985)	
Competitive enzyme-linked immunosorbent assay (CELISA)	Fosgate <i>et al.</i> (2003)	and McGiven <i>et al.</i> (2003)	
Complement fixation test (CFT)	Kassymov and Zhumagalikyzy (2011)	and Nielsen <i>et al.</i> (2001)	
Fluorescence immunoassay (FIA)	Hall <i>et al.</i> (1984)	and Hall and Confer (1987)	
Fluorescence polarization assay (FPA)	Kumar and Chand (2009)	and McGiven <i>et al.</i> (2003)	
Haemolysis-in-gel test (HIGT)	Dohoo <i>et al.</i> (1986)	and Ruckerbauer <i>et al.</i> (1984)	
Indirect enzyme-linked immunosorbent assay (IELISA)	Kumar and Chand (2011)	and Patel <i>et al.</i> (2008)	
Indirect haemolysis test (IHLT)	Sutherland (1984)	and Sutherland and MacKenzie (1983)	
Milk complement fixation test (mCFT)	Hunter and Allen (1972)		
Milk indirect enzyme-linked immunosorbent assay (mIELISA)	Gall <i>et al.</i> (2002)	and Nielsen <i>et al.</i> (2002)	
Milk fluorescence polarisation assay (mFPA)	Gall <i>et al.</i> (2002)	and Nielsen <i>et al.</i> (2002)	
Milk ring test (MRT)	Nielsen and Gall (2001)	and Vanzini <i>et al.</i> (2001)	
Particle concentration fluorescence immunoassay (PCFIA)	Greenlee <i>et al.</i> (1994)	and Nielsen <i>et al.</i> (1998)	
Plate agglutination test (PAT)	Fosgate <i>et al.</i> (2002)	and Ruckerbauer <i>et al.</i> (1984)	
Polymerase chain reaction (PCR)	Al-Garadia <i>et al.</i> (2011)	and Hafez <i>et al.</i> (2011)	
Radial immunodiffusion (RID)	Diaz <i>et al.</i> (1979)	and Jones <i>et al.</i> (1980)	
Rivanol test (RIV)	Dajer <i>et al.</i> (1999)	and Nicoletti and Tanya (1993)	
Rose Bengal plate agglutination test (RBPT)	Mangalgi <i>et al.</i> (2012)	and Vahora <i>et al.</i> (2011)	

Tube agglutination test (TAT) Fosgate *et al.* (2002) and McGiven *et al.* (2003)

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