

Seroprevalence of brucellosis and isolation and identification of *Brucella* in cattle in West Bengal

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Bovine brucellosis is a chronic bacterial disease in cattle causing a huge economic loss to the dairy farmers (Radostits *et al.* 2000). Various studies have been conducted in India to establish the prevalence of the disease in bovines (Sandhu *et al.* 2001, Chahota *et al.* 2003, Sharma *et al.* 2007, Trangadia *et al.* 2010). De *et al.* (1982) recorded 15.7% brucellosis in organized farms whereas only 2.7% was serologically positive in rural cattle in West Bengal. Hygromas, usually involving leg joints, are a common manifestation of brucellosis in cattle. Hygromatous swelling especially of knees, should be considered with suspicion (Radostits *et al.* 2000). Balbo *et al.* (1969) suggested that the presence of hygromas in the infected or suspected herds should be taken as an evidence of brucellosis. Chatterjee *et al.* (1995) had isolated *Brucella* organisms from vaginal swab and hygroma fluid in cattle from West Bengal.

The present work was undertaken to detect the seroprevalence of brucellosis in cattle in West Bengal and isolation of the causative agent was also attempted.

Seroprevalence of brucellosis in cattle in West Bengal: According to OIE (2009) Rose Bengal Plate Test (RBPT) is a suitable screening test for Brucellosis. Seroprevalence of brucellosis in cattle in both organized herds and rural area was studied using RBPT antigen, which was obtained from

Institute of Animal Health and Veterinary Biologicals. Information in respect to vaccination was collected prior to blood collection and vaccination against brucellosis with strain 19 was not recorded in the organized herds as well as rural cattle. The test was conducted as per OIE (2009) where pink-coloured agglutinating masses were visible within 4 min in positive cases.

Cultural isolation and identification of *Brucella* organism from cattle in West Bengal: Collection, processing and isolation of the *Brucella* organism were done as per Alton and Jones (1967). In this study isolation was attempted from aborted foetus, foetal membrane, vaginal swab and hygroma fluid. Primary isolation was attempted in tryptose agar medium.

The organism was identified as *Brucella* sp. on the basis of minute, glistening, transparent colonies were observed on agar plates against reflected light, no motility in tryptose broth, minute, pink cocco-bacillary organisms under oil immersion by Gram's staining, production of hydrogen sulphide (H₂S) in the agar medium and had urease activity in positive case, agglutination of the organisms in presence of strong positive serum and finally confirmation and typing of the organism in the Department of Veterinary Public Health at IVRI, Izatnagar, Uttar Pradesh.

In the present study out of 674 cattle screened, 81 were positive to brucellosis with a seroprevalence of 12.02% in organized herds in West Bengal with maximum seroprevalence observed up to 25%. Trangadia *et al.* (2010) had also recorded 13.78% seroprevalence of brucellosis in organized cattle farms in Hyderabad using RBPT. The seroprevalence of brucellosis was 0.25% in rural area where only 5 cattle were positive out of 2038 animals screened in West Bengal. The seroprevalence of brucellosis was 13.81% in cows (74 cows were positive out of 536 screened) and 5.07% in bulls (7 bulls were positive out of 138 screened) of organized herds in West Bengal. It was revealed that the seroprevalence of brucellosis in cattle in organized herds was higher than in the rural cattle, because in the organized herds

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cattle have a prolonged and persistent contact. Chatterjee *et al.* (1995) had also recorded high seroprevalence of brucellosis in cattle of organized farms in West Bengal. *Brucella* positive cows during abnormal termination of pregnancy and normal parturition excrete huge number of organisms in the vaginal discharge which act as a source of infection to the adjacent cattle. But in rural condition since cattle were maintained in individual household condition where there was less possibility of contracting infection. Lower seroprevalence of brucellosis in bulls than cows was due to the fact that individual bulls were kept in separate enclosure and other than semen *Brucella* organisms were not excreted through any other excretions and secretions.

Two *Brucella* organisms were isolated from 7 aborted foetus, 2 from 24 placenta and 1 from 20 vaginal swabs respectively. Out of 6 hygroma fluid only 1 *Brucella* organisms was isolated, the cow was also seropositive for brucellosis. All the isolated organisms were *Brucella abortus* biotype-1. Chahota *et al.* (2003) had also isolated *Brucella abortus* biotype-1 from morbid materials of cows in Himachal Pradesh. High seroprevalence of brucellosis in cows (13.81%) in the organized farms had a good correlation with the isolation of *Brucella* spp. from abnormal termination of pregnancy cases. *Brucella* organisms were isolated from aborted foetus, placental membrane and vaginal swab in this study. The existence of hygroma was suggestive of *Brucella* infection in the herd. This observation corroborated with that of Balbo *et al.* (1969). Chatterjee *et al.* (1995) had also able to isolate *Brucella* organisms from vaginal swab and hygroma fluid of cattle in West Bengal and were all *B. abortus*, biotype-1.

SUMMARY

Serum samples (674) were tested by RBPT for brucellosis and 12.02% cattle were found positive in organized herds in West Bengal whereas out of 2038 serum samples tested in rural area 0.25% were positive. Out of 7 aborted foetus, 24 placenta and 20 vaginal swabs screened the number of isolated *Brucella* organisms was 2, 2 and 1 respectively. Out of 6 hygroma cases screened only one *Brucella* organisms was isolated and the cow was seropositive too.

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