Seroprevalence of Brucellosis in Cattle of Central Gujarat


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ABSTRACT

The seroprevalence of brucellosis in cattle of central Gujarat as studied using Rose Bengal plate test (RBPT), standard tube agglutination test (STAT) and indirect enzyme linked immunosorbant assay (I-ELISA) was found to be 19.76 %, 16.57% and 24.12 %, respectively.

Keywords: Brucellosis, cattle, seroprevalence

Brucellosis is an important zoonotic disease which is found worldwide and causes heavy economic losses due to abortion, premature births, decreased milk yield and repeat breeding leading to temporary or permanent infertility in infected livestock (Yagupsky, 1999).

Many serological tests have been used for the diagnosis of brucellosis, the common are Rose Bengal plate test (RBPT), standard tube agglutination test (STAT), compliment fixation test (CFT) and indirect enzyme linked immunosorbant assay (I-ELISA).

The present study was carried out to find out the seroprevalence of Brucella spp. in cattle of Anand, Kaira, Ahmedabad and Vadodara districts of central Gujarat (India), which is one of the biggest milk pockets in India.

A total of 344 sera samples of cattle (336 cows and 8 bulls) were collected from Anand (74), Kaira (75), Ahmedabad (123) and Vadodara (72) and tested by RBPT, STAT and I-ELISA. The RBPT antigen and Brucella abortus agglutinating antigen for STAT were procured from the Division of Biological Products, Indian Veterinary Research Institute (I.V.R.I.), Izatnagar, Uttar Pradesh (India). For I-ELISA smooth lipopolysaccharide (S-LPS) based (A-B-ELISA) kits supplied by the All India Coordinated Research Project (AICRP) on Animal Disease Monitoring and Surveillance (ADMAS), Bangalore, was used. The tests were performed as per the manufactures instructions.

Out of 344 sera samples of cattle (336 cows and 8 bulls) tested, 81 (24.10%), 67 (19.94%) and 56 (16.67%) were found positive in cows, while 2 (25.00%), 1 (12.5%), and 1 (12.5%) were found positive in bulls by I-ELISA, RBPT, and STAT, respectively. Highest prevalence was found in Anand District which was, 31.8 %.

Overall prevalence of brucellosis in cattle found in present investigation was 15.98% which is in medium range as the prevalence of brucellosis was reported as low as 2.24 % in Kerala (Baby and Paily, 1979) to as high as 38.90% in North Gujarat region (Chauhan et al., 2000).

The RBPT showed overall 68.70% sensitivity and 99.35% specificity and STAT
Table 1: Geographical distribution of *Brucella* antibodies

<table>
<thead>
<tr>
<th>District</th>
<th>Number of samples tested</th>
<th>Number of samples +ve (%)</th>
<th>RBPT No. of samples +ve (%)</th>
<th>STAT No. of samples +ve (%)</th>
<th>Number of samples positive to all tests +ve (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anand</td>
<td>74</td>
<td>23 (31.08)</td>
<td>18 (24.32)</td>
<td>14 (18.91)</td>
<td>14 (18.91)</td>
</tr>
<tr>
<td>Kaira</td>
<td>75</td>
<td>16 (21.33)</td>
<td>15 (20.00)</td>
<td>12 (16.00)</td>
<td>12 (16.00)</td>
</tr>
<tr>
<td>Vadodara</td>
<td>72</td>
<td>17 (23.61)</td>
<td>14 (19.44)</td>
<td>12 (16.67)</td>
<td>12 (16.67)</td>
</tr>
<tr>
<td>Ahemdabad</td>
<td>123</td>
<td>27 (21.95)</td>
<td>21 (17.07)</td>
<td>19 (15.44)</td>
<td>17 (13.82)</td>
</tr>
<tr>
<td>TOTAL</td>
<td>344</td>
<td>83 (24.12)</td>
<td>68 (19.76)</td>
<td>57 (16.57)</td>
<td>55 (15.98)</td>
</tr>
</tbody>
</table>

63.36% sensitivity and 99.57% specificity when compared with I-ELISA. Therefore, the sensitivity of RBPT and STAT in comparison of I-ELISA was significantly low but their specificity was almost at par with I-ELISA which is similar to finding of other workers (Saravi *et al.*, 1995; Uzal *et al.*, 1995; Kumar *et al.*, 1999).

The concordance between the results of I-ELISA-RBPT was 92.60%, between STAT-I-ELISA was 91.09% and between RBPT-STAT was 97.98% for the diagnosis of brucellosis. Thus I-ELISA test in conjunction with other serological tests can give more reliable diagnosis of brucellosis.

**References**


