

SCREENING OF MILK SAMPLES FOR BRUCELLOSIS AROUND JAIPUR

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ABSTRACT

Brucellosis is one of the most important and widespread zoonosis in the world. The milk ring test is a satisfactory inexpensive test for the herd screening for brucellosis and may serve as an alternative to serum or milk based ELISA. In the present study 299 pooled milk samples were tested from collection area of two milk unions. The overall percent positivity for brucellosis was found to be 21.73% by milk ring test. Such a high positivity for brucella in milk samples is a serious public health concern.

Key words: Milk ring test, brucellosis, Jaipur

Brucellosis is an important disease of cattle and an important zoonosis worldwide. Most of the rural population in India is in direct contact with bovine population and are under great risk of transmission of infection from animals to humans (Radostits *et al.*, 2006). It is of major economic importance in developing countries like India that do not have a national brucellosis eradication program. The economic losses are because of abortions, stillbirths, reduced milk production and infertility in animals. The prevalence of infection varies considerably among herds, areas, and countries. Several serological tests such as Rose Bengal Plate Test (RBPT), Complement Fixation Test (CFT) and ELISA assay are used for diagnosis of brucellosis. Tests for detection of *Brucella* antibodies in milk from bulk milk tanks are considered the principal methods for detecting infected herds (Noviello *et al.*, 2004).

The milk ring test (MRT) is a satisfactory inexpensive test for the surveillance of dairy herds for brucellosis and may serve as an alternative to serum or milk based tests. Single MRT would have a 65% probability of detecting one reactor cow in more than 95% of the herds in most dairy states if the test was conducted on bulk tank samples (Roepke and Stiles, 1970). Popova and Arakelyan (2011) concluded that the MRT has good sensitivity particularly for early stages of brucellosis in animals. The MRT works on the principle that antibodies against *B. abortus* attach themselves to fat globule which rise to the surface of the milk, clustering in the cream layer and bind with tetrazolium/ haematoxylin stained *B. abortus* antigen to form a ring in the creamy layer of milk (Sutra *et al.* 1986; Huber and Nicoletti, 1986). A small sample

of pooled fresh milk or cream is tested and the herd is classified only as suspicious or negative. The present study was undertaken to screen the milk samples for the presence of brucella in and around Jaipur.

Milk samples were collected from Milk Union Kaladera area and Milk Union Manpura Machedi area of Jaipur district of Rajasthan. A total of 299 pooled milk samples (168 from Kaladera and 131 from Manpura Machedi) were collected. The milk samples were transported on ice and subjected to MRT on the same day. For the test, 50 µl of MRT antigen was added to 1 ml volume of whole milk in a test tube making at least 2 cm of milk column. The antigen was mixed with milk and incubated at 37°C for 1 h. A strong positive reaction was indicated by dark pink ring in the fat layer above a white milk column and negative if the colour of the antigen diffused throughout the milk column with absence of any pink ring in the fat layers. The antigen used in MRT for testing of samples was procured from the Institute of Animal Health and Veterinary Biologicals (IAH and VB), Hebbal, Bengaluru, India.

Out of 168 pooled milk samples from Kaladera milk union area, 43 (25.59%) samples showed positive results in MRT. Of the 131 pooled milk samples from Manpura Machedi, 22 (16.79%) samples were found to be positive. Overall 65 out of 299 milk samples (21.73 %) showed positive MRT. Patel *et al.* (2014) found the overall herd prevalence in peri-urban areas of Gujarat was 33.70% using milk-ELISA. In a study conducted by Mahajan *et al.* (2011), 33.34% samples were found to be positive for *Brucella* by MRT. Aulakh *et al.* (2008) screened milk samples for *Brucella* antibodies employing ELISA test and found the overall 18.26% prevalence of brucellosis.

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In a study in Vindhya region of Madhya Pradesh, 4.58% milk samples of cows were found positive with milk ring test (Singh *et al.*, 2016). Kumar *et al.* (2016) screened milk samples from selected districts of Tamil Nadu and found 4.35% of milk samples positive for brucellosis using MRT. Shome *et al.* (2015) in a detailed study found overall positivity of 2.55% among 64818 pooled milk. Dubey and Mathur (1980) found prevalence of brucellosis to be 4.51% in cows and 3.48% in buffaloes Milk samples in the Ajmer and Tonk districts of Rajasthan by the milk ring test. In various earlier studies, there has been a variation in prevalence of brucellosis. The prevalence of brucellosis has been recorded both high and lower than that observed in the present study. This indicated the spatial variation among the prevalence of brucellosis in bovines. Such a high prevalence as recorded in this study is a serious public health concern and there is a need to create awareness among the masses for disease prevention.

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