



Short Communication

Co-incidence of Bovine Johne's disease and Bovine Brucellosis in Young Bulls of Murrah Breed in their Native Tract (Rohtak, Haryana, India)

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ABSTRACT

Department of Animal Husbandry, Uttar Pradesh sampled 25 young male buffaloes (Murrah breed) marked for purchase from different farmers in their native tract (Rohtak district of Haryana). Sero-incidence of Bovine Johne's disease (BJD) and Bovine Brucellosis (BBr) was estimated using 'Indigenous ELISA kit' and Serum agglutination test, respectively. Of the 25 young Murrah bulls screened, 14 (56.0%) and 1 (4.0%) were positive for BJD and BBr, respectively. Sero-incidence of BJD was higher in young bulls of Murrah breed in their native tract.

Key Words: Bovine Johne's disease, Bovine brucellosis, Murrah buffalo, Indigenous ELISA kit, Serum agglutination test

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Buffalo population in India has shown rising trend in last 5 decades due to its value for milk and meat. Presently, Indian buffalo population is 115.4 million (FAO, 2013). Of the 12 breeds of buffaloes in India, Murrah is the best breed for milk production in the country and is native of Rohtak and Jind districts of Haryana state of India. Animal Husbandry Department of Uttar Pradesh (UP) state has several programmes for upgrading of local low yielding buffaloes population with Murrah breed. Therefore, it is essential to screen the males of breeding age in the native tract for chronic infections (Bovine Johne's Disease or BJD and Bovine brucellosis or BBr). Johne's disease (JD) is important infectious disease of ruminants causing granulomatous enteritis and reduced productivity. JD is world-wide in distribution (Singh et al., 2008; Singh et al., 2011; Chiodini et al., 2012; Singh et al., 2013). Brucellosis is major cause of reduced fertility, sub-fertility / infertility in large ruminants and about 18–40% reach abattoir mostly due to infertility (Sharma et al., 1993). Both of these chronic infections have

also serious zoonotic concerns. There is continuous sale and purchase of young Murrah buffaloes (males and females) from native tract to develop either new dairy herds or up-grade existing herds in Northern regions of the country. In buffaloes, Murrah is the most preferred breed and usually it is males which are purchased from different government schemes for up-gradation of the local low producing animals. Present study aimed to estimate the status of the two important infections (BJD and BBr), in prospective males, of best Indian dairy breed of buffaloes (Murrah) in its native tract.

Twenty five young (2–2.5 years old) male buffaloes (prospective bulls) of Murrah breed were marked for purchase from individual farmers in the Rohtak district of Haryana for distribution to government dairy farms of Uttar Pradesh (UP) by the Department of Animal Husbandry, UP.

Table 1: Screening of young males of Murrah breed of buffaloes using Indigenous ELISA kit

Total Samples	Positives A	Strong Positives B	Total Positives (A+B)	Low Positives C	Negatives D	Suspected E	Total Negatives (C+D+E)
25	12 (48.0)	2(8.0)	14 (56.0)	3 (12.0)	2 (8.0)	6 (24.0)	11 (44.0)

Table 2: Comparative incidence of Bovine Johne's disease and Bovine Brucellosis in young male of Murrah breed of buffaloes using Indigenous ELISA and Serum Agglutination tests

Tests	Combinations			
	1	2	3	4
Indigenous ELISA	+	–	+	–
SAT	+	–	–	+
Total 25	1 (4.0)	11 (44.0)	13 (52.0)	0 (0)

Figure in parenthesis are percentage

Serum samples were collected from 25 bulls were screened for Bovine Johne's disease (BJD) and Bovine Brucellosis (BBr) using Indigenous ELISA (i-ELISA) kit and Serum Agglutination Test (SAT), respectively. i-ELISA kit was initially developed for screening of goats (Singh et al., 2007a) and has been standardized for screening of buffaloes (Yadav et al., 2008; Singh et al., 2007b). Soluble protoplasmic antigen (PPA) was prepared from native 'Indian bison type' genotype of MAP strain 'S 5' isolated from a terminal case of Johne's disease in a goat (Sevilla et al., 2005). Culture positive and negative cattle were used as positive and negative controls, respectively. Optical densities (OD) were transformed to S/P ratios and bulls were categorized as negative (0.00–0.09), suspect (0.10–0.24), low positive (0.25–0.39), positive (0.40–0.99) and strong positive (1.0–10.00) for status of JD (Collins, 2002). Samples in strong positive and positive categories were considered as positive for MAP infection.

For the estimation of Bovine Brucellosis serum samples were tested by Serum Agglutination Test (SAT) following procedure of Alton and colleagues (1988). *Brucella abortus* (Brew 2/85–86) plain antigen used was supplied by the Biological Products Division of the Indian Veterinary Research Institute (IVRI), Izatnagar, Bareilly, UP. Agglutination titres of 1:40 and above were considered as positive and 1:20 as doubtful.

Of the 25 serum samples, 14 (56%) and 1 (4%) were positive for MAP infection and Brucellosis, respectively (Table 1, 2). Of 14 positive samples in i-ELISA for JD, 12 (48.0%) and 2 (8.0%) were in the positive and strong positive categories, respectively (Table 1, 2).

Bovine Johne's disease and Bovine Brucellosis are two important infectious diseases of ruminants. The twin infections besides causing economic losses, have zoonotic and public health significance by inviting trade restrictions. BJD is primary cause of weakness, low productivity and emaciation whereas Brucellosis causes reproductive failure (abortions). In this study, incidence of BJD and bovine brucellosis were 56.0% and 4.0%, respectively. Earlier studies reported 6.0 to 85.2% prevalence of BJD in different parts of India using different tests (Sharma et al., 2008; Mishra et al., 2009). Using sensitive ELISA, IFN- γ and PCR tests, studies have reported high to very high prevalence of BJD in buffaloes of the country, despite high slaughter rate as compared to cows (Sivakumar et al., 2006; Vinodh Kumar et al., 2010; Kaur et al., 2011). Previous studies in Gujrat, Andhra Pradesh, UP and Punjab have also reported lower sero-prevalence of brucellosis (Trangadia et al., 2012, Renukaradhya et al., 2002, Singh et al., 1998).

Study showed that it is important to screen males and females of Murrah breed of buffaloes for the diagnosis of MAP and *Brucella* infections in animals before introduction into new herds. High incidence of MAP infection in the young males of Murrah buffaloes in the native tract calls for immediate steps to control BJD in the country. Though incidence of Bovine Brucellosis was low, however, being major zoonosis calls for immediate measures for control.

CONFLICT OF INTEREST

No conflict of interest to declare.

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