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Seroprevalence Study of Bovine Brucellosis in Slaughter House

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Abstract Brucellosis is a zoonotic bacterial diseases affecting wide range on animal species. The present study was conducted at sera samples collected from slaughter house in Chennai. The samples were subjected to three serological tests viz, RBPT, STAT and i-ELISA of these of 11 (5.23%), 7 (3.3%), 24 (11.4%) were positive by RBPT, STAT and i-ELISA respectively. Comparison of diagnostic tests to assess the sensitivity and specificity of i-ELISA with RBPT and STAT respectively and it was found to be 91.6% and 93.4% when compared to with RBPT whereas it become 100% and 91.6% when compared with STAT.
Keywords *Bovine Brucellosis, RBPT, STAT and i-ELISA*

1. Introduction

Brucellosis is a worldwide zoonotic bacterial disease which causes significant reproductive loss in livestock (OIE, 2009). In animals, bovine brucellosis is characterized by reproductive failure which can include abortion, birth of weak, unthrifty calves, orchitis and/or epididymitis in male. The organism causes abortion in cattle after the fifth month of pregnancy with retention of placenta, metritis and subsequent period of infertility. It is a highly contagious disease transmitted by both vertical and horizontally. The present study was conducted at samples collected from slaughter house in Chennai and to compare three diagnostic tests viz., RBPT, STAT and i-ELISA in terms of sensitivity and specificity for detection of Brucella antibodies in cattle. The present study was conducted at samples collected from slaughter house in Chennai and to compare three diagnostic tests viz., RBPT, STAT and i-ELISA in terms of sensitivity and specificity for detection of *Brucella* antibodies in cattle.

2. Materials and Methods

A total of two hundred and ten sera samples collected from unvaccinated bulls slaughtered at slaughter house in Chennai over a period of one year in 2010 and stored at -20°C till further use. Sera samples were subjected to Rose Bengal Plate Test (RBPT) and Standard Tube Agglutination Test (STAT) as per Alton et al., (1975) using Rose Bengal Plate antigen (IVRI, Izat Nagar) and plain

Brucella abortus antigen respectively (IVPM, Ranipet). The indirect-ELISA test was carried out using kits supplied by Defence Research Development Establishment (DRDE), Gwalior.

3. Results and Discussion

The sera samples were collected out from bulls slaughtered in slaughter house. Seroprevalence of Brucellosis in Chevon goats from Bareily slaughter house was carried out by Mudit et al., (2005). Two hundred and ten sera samples collected from bulls slaughtered at slaughter house were tested by RBPT, STAT and i-ELISA for detection of Brucellosis antibodies and of these 11 (5.23%), 7 (3.3%), 24 (11.4%) were positive by RBPT, STAT and i-ELISA respectively. Agarwal et al., (2007) reported 4.9%, 3.5% and 8.4% samples from cattle to be seropositive in RBPT, STAT and i-ELISA respectively.

Comparison of diagnostic tests to assess the sensitivity and specificity of i-ELISA with RBPT and STAT respectively and it was found to be 91.6% and 93.4% when compared to with RBPT whereas it becomes 100% and 91.6% when compared with STAT. The results were shown in Table 1 & 2. The sensitivity to i-ELISA was 100% and specificity was 95.54% and 94.04% when compared to RBPT and STAT was reported by Priyadarshini et al., (2012).

Sarumathi et al., (2003) found the sensitivity of AB-ELISA to be 100%. The specificity was 88.22% and 90.59% when compared with RBPT and STAT respectively. The samples that were positive by STAT were also positive by both RBPT and i-ELISA. i-ELISA kit was based on the OMP gene31 which was specific for Brucella organism detected even low concentration of antibody and poor quality serum can also be utilized when compared to RBPT and STAT Thakur and Thapliyal (2004).

Avidin-biotin based ELISA had high sensitivity and specificity which can be used for sero-epidemiological investigation was reported by Renukaradhya et al., (2001). Our study finding were coherence with Chakraborthy et al., (2000) who observed that comparison between RBPT and STAT show that RBPT had higher sensitivity as it detected more number of samples to be positive.

4. Conclusion

Seroprevalence study of bovine brucellosis in slaughter bulls carried out. Two hundred and ten sera samples collected from bulls slaughtered at slaughter house were tested by RBPT, STAT and i-ELISA for detection of Brucellosis antibodies and of these 11 (5.23%), 7 (3.3%), 24 (11.4%) were positive by RBPT, STAT and i-ELISA respectively. It is found that i-ELISA test was more sensitive and specific when compared to other two tests viz RBPT and STAT.

Table 1: Sensitivity and Specificity Analysis between RBPT and I-ELISA

Test	Result	RBPT		Total
		Positive	**Negative**	
i-ELISA	Positive	11	13	24
	Negative	1	185	186
	Total	12	198	210

Table 2: Sensitivity and Specificity Analysis between STAT and I-ELISA

Test	Result	STAT		Total
		Positive	**Negative**	
i-ELISA	Positive	7	17	24
	Negative	0	186	186
	Total	7	203	210

Acknowledgement

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