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Abstract: *Toxoplasma gondii*, an intracellular apicomplexan protozoan parasite, is prevalent worldwide. All the stages of lifecycle of *T. gondii*, viz. tachyzoites, bradyzoites and sporulated oocysts are potentially infective. Information on prevalence of toxoplasmosis in animals and man is scanty from India. Since there is no information available on the prevalence of toxoplasmosis among the economically important farm animals from the Jharkhand state, the present study was undertaken with the objective of studying the seroprevalence of *T. gondii* in small ruminants and pigs. In order to accomplish the objective, ELISA was laboratory standardized using standard reagents. A native protein based antigen was prepared from the purified tachyzoites of *T. gondii*, whole tachyzoite lysate antigen (WTLA) and was used in the indirect ELISA for screening the *Toxoplasma*-specific IgG molecules present in the sera. The serodetection potential of the native WTLA based ELISA was further compared with a recombinant surface antigen 1(SAG1) protein based ELISA. The serum samples were collected randomly from the target animals maintained either as free range management system in rural house holds as well as from the organized Government farms of Ranchi and Chatra districts of Jharkhand state. While collecting the samples, the age, sex and breed of the animals were recorded for drawing correlations with the prevalence of toxoplasmosis, if existing. A total number of 240 pig serum samples were collected from organized farm and slaughter house. The recombinant surface antigen1 based ELISA was superior in detection of the *T. gondii* specific IgG antibodies in 44.58 % of the serum samples tested over the crude whole tachyzoite lysate antigen (WTLA) which could detect the same in 40% of the samples. The prevalence of the disease was found more in the samples collected from slaughter houses i.e., 53.75% and 23.75% than that of farm i.e., 26.25% and 48.12% by rSAG1 and WTLA based ELISA, respectively. Sera samples were collected from Muzaffarnagari, Shahabadi and Chotangpuri breeds of sheep from Chatra and Ranchi districts of Jharkhand. The rSAG1 showed diagnostic superiority over the native WTLA. Out of 444 samples analyzed, 188 samples (42.34%) were found positive by rSAG1 ELISA, whereas 131 samples (29.5%) were positive with whole tachyzoites lysate ELISA. The seroprevalence of toxoplasmosis was studied in the Beetal and Black Bengal breeds of goats reared in the organized farm of RVC, Ranchi and Chatra as well as from the village conditions of Chatra and Ranchi districts of Uttarakhand. A total number of 445 serum samples were collected of which 120 samples were collected from Chatra farm maintaining Beetal breed of goats and 65 samples were collected from Instructional farm of small ruminants, Ranchi maintaining Black Bengal breed of goats. Rest 260 samples were collected from Black Bengal goats reared at village conditions. The rSAG1 ELISA was superior in detection the toxoplasma specific IgG molecules and could detect 42.47% of the total serum samples as positive, whereas whole tachyzoites lysate ELISA could detect 29.44% of the samples as positive. The *Toxoplasma gondii* specific polypeptides were resolved in the molecular range of 73.0 to 11 KDa in a 6-15% gradient SDS-PAGE under denaturing condition. The major polypeptides detected were in the molecular range of 73, 64, 55, 49, 40, 38, 37, 30, 25, 14 and 11 KDa. To identify immunodominant protein in whole tachyzoite antigen lysate of *T. gondii* western blotting was performed. The proteins in the molecular range of 73, 64, 49, 40, 37, 30 and 25 KDa showed immunoreactivity against goat serum collected from field, whereas 55, 49, 37, 25 KDa band shown a good immunoreactivity against sheep serum collected from field. The ELISA based detection method applied in the present study involving pig, sheep and goat population reared either as free range husbandry system or in organized farms generated important data on seroprevalence of toxoplasmosis at Jharkhand region. A high seroprevalence of toxoplasmosis among several food animals warrants for adoption of control measures to prevent transmission to susceptible humans.

Description: SEROPREVALENCE OF TOXOPLASMA GONDII IN SMALL RUMINANTS AND PIGS IN AND AROUND RANCHI

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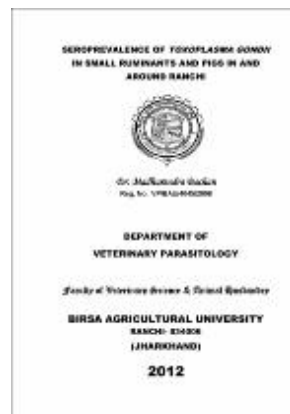
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