

Serological Status to Natural *Toxoplasma gondii* Infection in Mixed Flocks of Sheep and Goats in Bangladesh

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INTRODUCTION

Toxoplasma gondii causes abortion and perinatal mortality in goats (Dubey et al. 1981; McSparran et al. 1985; Nurse and Lenghaus 1986), and in sheep (Hartley and Marshall 1957; Beverley and Watson 1961; Plant et al. 1974; Dubey and Schmitz 1981). The higher serologic response to natural *T. gondii* infection in sheep compared to cattle has been reported (Munday and Corbould 1979). An attempt was thus carried out to compare the serologic status of sheep and goats which were reared together with infected flocks in Bangladesh.

MATERIALS AND METHODS

Mixed flocks of about 100 sheep and 145 goats were reared at the Bangladesh Agricultural University artificial insemination centre and university farm. Blood samples were collected from the jugular vein of randomly selected 56 sheep and 33 goats from the two mixed flocks. These animals were of local breeds, 6-30 months of age and of both sexes, maintained since birth in mixed flocks. Sera were separated following the standard method, and assayed for the presence of antibodies to *T. gondii* using latex agglutination test (Eiken Chemical Co, Ltd., Japan). Sera were screened at a dilution of 1:8 in U-well microtitre plates (Nune, Inter Med, Denmark) and those which gave positive reactions were titrated until 1:1024 through serial dilution. Positive controls were likewise carried out. Results were analyzed statistically using Chi-square test.

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RESULTS AND DISCUSSION

Table 1 shows the serological response of sheep and goats to T. gondii at different serum dilutions. Thirty-six (64.0%) sheep and 18 (54.0%) goats exhibited positive antibodies to T. gondii. The diagnostic positive titre of equal or greater than 1:64 in sheep (Trees et al. 1989) was detected in 30 (53.6%) of the sheep, and in 12 (36.4%) of goats. The seropositive rate of 53.57% in sheep and 36.36% in goats reared under farm condition in the present study differ from the 17.65% in sheep and 12.09% in slaughtered goats kept under rural condition as reported by Samad et al. (1992, In Press) in Bangladesh. Samad (1992) thinks that the higher seropositive rates of sheep and goats to T. gondii reared in farms could be attributed to food contamination with cats' feces.

TABLE 1: Serologic status of sheep and goats naturally exposed to Toxoplasma gondii

Titre	56 Sheep No. positive (%)	33 Goats No. positive (%)
1:8	6 (10.71)	6 (18.18)
1:64	12 (21.43)	9 (27.27)
1:128	6 (10.71)	3 (0.09)
1:256	6 (10.71)	- (0.00)
1:1024	6 (10.71)	- (0.00)

negative (-)

equal or greater than 1:64 (diagnostic positive titre)

The overall seropositive rate of sheep and goats to T. gondii did not show any significant difference, however, the diagnostic titre was noted to be significantly higher in sheep (53.57%) relative to goats (36.36%). These findings are consistent with those of Fahmy et al. (1979), Aganga et al. (1981), Osiyemi et al. (1985), Hossain et al. (1987) and Bekele and Kasali (1989), who reported higher seroprevalence rates in sheep compared to goats. In a similar study, however, Singh and Msolla (1986) and Nene et al. (1986) noted higher seropositive rates among goats compared to sheep.

As shown in Table 1, higher antibody titres were noted in sheep (1:1024) compared to goats (1:128). The lack of documented reports parallel to the present work prevents us from comparing our results. For now, we think that the higher diagnostic titre, and higher seropositive rate in sheep compared to goats may be due to greater susceptibility of sheep to natural T. gondii infection. Further experimentations, however, are needed to clarify this supposition.

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The high seropositive rates in sheep and goats to T. gondii indicate that toxoplasmosis is widespread in animal populations in Bangladesh. Samad (1992) has shown this infection to cause abnormal reproduction outcome in black Bengal goats. Thus, further studies on the local epidemiology, pathological and parasitological aspects of this infection is warranted to supplement the present serological observations.

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