

SEROLOGICAL SURVEY FOR *BRUCELLA OVIS* DISSEMINATION AMONG GOATS (*Capra aegagrus hircus*)

СЕРОЛОГИЧНО ПРОУЧВАНЕ НА РАЗПРОСТРАНЕНИЕТО НА *Brucella ovis* СРЕД КОЗИ (*Capra aegagrus hircus*)

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ABSTRACT

By complement fixation test 230 blood samples from goats and he goats were examined for presence of antibodies against *Brucella ovis*. 134 blood samples were from goats (23 of them were from slipping goats) and 96- from he goats. The animals come from private farms in the Plovdiv and Pazardzhik regions (Southern Bulgaria).

10.87% of all tested blood samples contain antibodies against *Brucella ovis*. Differences in the percentage of the positive reagents of different goat categories were found. The highest percentage was among slipping goats (39.13% towards to 11.71% among the healthy goats and 3.13% among he goats).

It can be concluded that goats play an important role in the epidemiology of the disease. The greatest risk is slipping goats bred together with sheep flocks.

Keywords: *Brucella ovis*, *Capra aegagrus hircus*, complement fixation test

РЕЗЮМЕ

Чрез реакция за свързване на комплемента са изследвани 230 бр. кръвни проби от кози и пръчове за наличие на антитела срещу *Brucella ovis*. 134 бр. кръвни проби бяха от кози (23 от тях от абортилали) и 96 от пръчове. Животните произхождат от лични стопанства в Пловдивска и Пазарджишка области.

Получените резултати от изследването показаха, че 10.87% от всички изследвани кръвни проби от кози и пръчове съдържат антитела срещу *Br. ovis*. Бяха установени различия в процента на серореагентите при различните категории кози. Най-нисък е при пръчовете (3.13%), а най-висок е сред абортиралите кози (39.13% спрямо 11.71 % сред неабортиралите).

Като резултат на изследването може да се направи извода, че козите имат важна роля в епидемиологията на заболяването. Най-голям риск представляват абортиращите кози, отглеждани съвместно с овчи стада.

INTRODUCTION

Brucella ovis is the cause of a chronic disease in rams, characterized by an inflammation of the epididymis. This infection was found in both Australia and New Zealand in the 1950's, but has subsequently been discovered in all continents (Buddle, 1956).

Currently, this infection causes serious economic damage to sheep breeding worldwide, expressed by reduction and loss of fertility of male sires which leads to an irregular breeding process (Gelev, 1987).

Originally, it was assumed that *Br. ovis* was only adapted to the body of rams. There were, however, reports that other species were also susceptible to this bacterium - deer (Barron et al. 1985, Ridler et al., 2000) and mouflon (O'Neil, 1996, Cerri et al., 2002).

Goats, although biologically similar to sheep, show some difference in their sensitivity to an infection by *Br. ovis*. Publications on this subject are scarce. Van Drimmelen (1974) first reported a detection of antibodies against *Br. ovis* in goat blood samples.

Experimental infections of male and female goats were also performed (Burgess et al., 1985, Garcia-Carrillo et al., 1977, Ivanov and Bochoukov, 1992). There is serological evidence of natural infection of pregnant goats and he goats (Ivanov, 1988, Kostov, 1999).

This work presents evidence for the presence of antibodies against *Br. ovis* in blood serums of he goats and goats. Concerning the possibility of transmission of infection from goats to sheep because of their breeding together, we believe that these data will contribute to the clarification of the epidemiology of this disease.

Materials and methods

230 blood samples from goats and he goats were examined, respectively: 134 goat (23 of them slipping) and 96 he goat samples. The animals come from private farms in the Plovdiv and Pazardzhik regions (Southern Bulgaria).

Blood samples were obtained by a puncture of v. jugularis. The serum, separated by centrifuging (2000g for 15min.), was examined for content of antibodies against *Br. ovis* by complement fixation test (Friemel, 1987). Standard antigen *Brucella ovis* for routine diagnostics was used.

Results and Discussion

The results obtained from the survey are illustrated in Table 1. It shows that 10.87% of all tested blood samples from goats and he goats contain antibodies against *Br. ovis*. This not insignificant percentage is probably even higher. By combining two or more methods of testing (CFT, ELISA, gel-diffusion, immunoelectrophoresis) a larger number of seroreagents is revealed (Burgess et al., 1985, Gelev, 1987).

Differences in the percentage of the positive reagents of different goat categories were found. The lowest was by he goats (3.13%), which can be explained by the rapid elimination of the bacteria from the body by a natural infection (Kostov, 1999). The result values are higher than the reported by Kostov (1999) for a ten years' period (1983-1993) - 0.82%. This shows that, although slowly, the percentage of positive reagent he goats increases. The data presented by Ivanov and Bochukov (1992) and Garcia-Carrillo (1974) confirm this tendency. According to the authors, experimental infection of he goats with *Br. ovis* leads to patho-histological changes in the testicles and epididymis and the formation of specific antibodies. Therefore, the epidemiological role of he goats as carriers of infection should not be underestimated.

In the analysis of the results is as well to be noticed the high percentage of positive reagents among slipping goats (39.13%) compared to the percentage of the healthy goats-11.71%. Similar results were obtained by Ivanov and Parvanov (quote of Ivanov and Bochukov, 1992), who have regularly discovered antibodies against *Br. ovis* in blood serums of slipping goats, he goats and mouflons grown in two different regions of Bulgaria. There is a certain amount of positive reagents among goats that have not slipped. The fact that by the experimental infection, 100% of them form antibodies against *Br. ovis* shows the important role of the goats in the spread of this infection, especially when bred together with sheep. Thus, according to Mottie and Myers (1985), *Br. ovis* were present both in sheep and goat flocks in Argentina and Peru.

Overall, we can conclude that goats play an important role in the epidemiology of the disease. They are more sensitive to it than mouflons (Cerri et al, 2002) despite the very close biological relationship between the latter and sheep. The greatest risk is slipping goats bred together with sheep flocks.

Table 1. *Content of antibodies against Brucella ovis in sera from goats and he goats*
Таблица 1. *Наличие на антитела срещу Brucella ovis в серуми на кози и пръчове*

Type of animals	Number of animals researched	Number of positive reagents	Positive reagents percentage
Goats that have not slipped	111	13	11.71
Slipped goats	23	9	39.13

He goats	96	3	3.13
Total	230	25	10.87

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