

SHORT COMMUNICATIONS

Preliminary Serological Investigation on Caprine Arthritis and Encephalitis Virus Infection in a Goat Farm from North-Eastern Romanian Region

Iuliana MIHAI*, Ioana Cristina CRIVEI, Cristina HORHOGEA, Gheorghe SAVUȚA, Elena VELESCU

Department of Public Health, Faculty of Veterinary Medicine, M.Sadoveanu Street, No. 8, Iași.

*corresponding author: iuliabogdan2005@yahoo.com

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Abstract:

Caprine arthritis encephalitis is an important disease of dairy goats with a worldwide distribution. Despite the eradication programs, this disease is still prevalent and causing huge financial losses due to reduced lactation performance and culling. The aim of this study was to reveal the presence of CAEV antibodies among a goat population from the North-Eastern of Romania. During 2014-2016, a total of 295 blood samples were collected from healthy or diseased animals. The serum samples were tested for CAEV antibodies detection, using the agar gel immunodiffusion (AGID) test. Within the 295 serum samples tested by AGID technique, 31.86% were confirmed as being positive. All positive samples came from subjects without clinical signs of disease. The results obtained in this preliminary study; show that CAEV is present in French Alpine goats breed within a farm in North-Eastern of Romania.

Keywords: AGID, CAEV, goat.

Introduction

Caprine arthritis encephalitis is caused by CAE virus (CAEV) of Lentivirus genus, belonging to Retroviridae family (Peterhans *et al.*, 1992). This virus typically affects goats of all ages, breed and gender (Balbin, 2017) and less frequently infects sheep. Infection manifests chiefly as painful arthritis and or encephalomyelitis (De Cardona, 2016). The infection is characterized by lifelong persistence of causal agent in host monocytes and macrophages and a variable length of time between infection and induction of a serologically detectable antiviral antibody response (Turina *et al.*, 2005).

Early symptoms of infection include swelling of joint capsule and lameness (Faez *et al.*, 2017). Although infected animals are asymptomatic and could develop an untreatable lifelong disease syndrome, they can also transmit the virus to their

baby goat through colostrum or to herd-mates by direct contact (De Cardona, 2016).

The aim of this study was to reveal the presence of CAEV antibodies among a goat population from the North-Eastern of Romania using the agar gel immunodiffusion (AGID) test.

Materials and methods

From a herd with 400 French Alpine goats the blood samples 41 were collected from 295 goats, both healthy with clinical signs of disease. A total number of 265 females and 30 males with ages between 1.5 and 4 years old were taken in this study. In order to obtain serum samples, blood was harvested from jugular vein in red cap vacutainers, centrifuged for 15 minutes at 1.500 rotations/minute, separated from the clot and stored at -20°C.

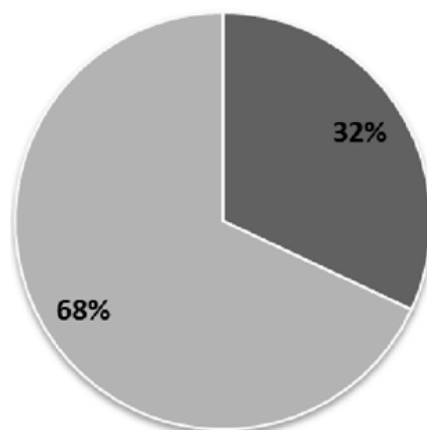


Figure 1. Prevalence of CAEV antibodies in a goat farm from North-Eastern Romanian Region

The serum samples were tested for CAEV antibodies using CAEV p28 AGID (agar gel immunodiffusion), Pourquier-Montpellier diagnostic kit. The test was performed in plastic Petri dishes, Ø 10 mm with 17ml 1% agarose gel medium (0.05 M Tris buffer, pH 7.2, and 8.0% NaCl). A pattern with alternating holes was used: three large (5 mm diameter) for the serum samples (50µl), three small (3 mm diameter) for positive control test (25µl) and one central for antigen (3 mm diameter - 25µl). Each hole was placed at 2 mm distance one by another. In each plate were tested 18 goat serum samples.

The plates were incubated at 20 - 24°C in a humid dark chamber for 24 hours, to express the precipitin lines (OIE, 2009). The positive results were retested using the same method.

Results and discussions

A total number of 295 serum samples, harvested from the same number of animals have been verified in this trial. From those, 94 were positive to CAEV antibodies, resulting a seroprevalence of 31.86% and 201 samples were negative (68.14%) (Fig.1). Out of the 94 positive samples, only 9 (9.57%) goats had clinical signs of CAEV. According to their gender, 89 (94.68%) samples have been harvested from female goats and only 5 of them (5.32%) from male goats. According to their age, all of the animals were younger than 3 years old.

We must add that the animals were bought from various goat breeders within different regions of Romania, or abroad (France, Switzerland, Spain and New Zealand). Taking into consideration that a lot of the goats came from France or New Zealand

and these two countries are not CAEV free (Yang *et al.*, 2017), our results are sustainable.

In this study, all positive samples came from goats without clinical signs of disease. Our results regarding the seroprevalence of CAEV in Romania, are supported by other studies, Enache *et al.*, (2017) reported the 40% of CAEV seroprevalence at national level and Gurau *et al.*, (2015) 38.46% in only one goat flock.

However, in our study, the CAEV seroprevalence rate is close to the one in U.S.A., 31% (Cutlip, 1992) and 35% in Brazil (Bandeira, 2009) and lower than in Somalia (60%) (Ghanem *et al.*, 2009), Italy (40%) (Gufler *et al.*, 2007), Norway (42%) (Nord *et al.*, 1997) and Jordan (89%) (Al-Qudah *et al.*, 2006), but higher than in Mexico (0.4%) (Torres-Acosta *et al.*, 2003), Thailand (5.52%) (Thant *et al.*, 2011) and Turkey (1.9%) (Aslantas *et al.*, 2005). Presence of CAEV infection in goat farms is alarming and is ideal to have this situation under control, considering the fact that CAEV infection is hard to manage.

Taking into consideration the seroprevalence obtained in our study, we sustain World Organization for Animal Health (OIE, 2009) recommendations for goat imports from other countries: **1.** he goats should show no clinical signs of CAEV on the day of shipment; **2.** goats over a year old should be tested negative for CAEV, 30 days prior to shipment; **3.** CAEV must be neither clinically nor serologically diagnosed at the origin of the goat flocks during the past three years, and importing goats from a flock of CAEV infected or of unknown health status are prohibited during this three year period (Yang *et al.*, 2017).

Conclusions

This results shows that CAEV is present in French Alpine goats within a farm in North-Eastern Romanian Region. High prevalence of CAEV (31.86%) has been associated with low clinical signs and this confirms that CAEV infection evolves asymptomatic. We also encourage implementation of CAEV control for goats which need to be imported from other countries.

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