

SHORT COMMUNICATION

Seroprevalence of *Coxiella burnetii* in domestic ruminants in Gran Canaria island, SpainN. F. Rodríguez¹, C. Carranza², M. Bolaños², J. L. Pérez-Arellano^{2,3} and C. Gutierrez¹¹ Department of Animal Medicine and Surgery, University of Las Palmas de Gran Canaria, Las Palmas, Canary Islands, Spain² Insular University Hospital of Gran Canaria, Canary Service of Health, Las Palmas, Canary Islands, Spain³ Department of Medical and Surgical Sciences, University of Las Palmas de Gran Canaria, Las Palmas, Canary Islands, Spain**Keywords:***Coxiella burnetii*; Canary Islands; ruminants; zoonosis**Correspondence:**

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Summary

Coxiella burnetii is the causative agent of Q fever, a zoonosis with worldwide occurrence. In the Canary Islands, the overall seroprevalence in humans has been estimated to be 21.5%. Gran Canaria island concentrates the highest ruminant population in the archipelago and the prevalence of the human infection is 23.5%. To evaluate the seroprevalence in livestock and the affected areas in Gran Canaria island, a total of 1249 ruminants were randomly selected for this study (733 goats, 369 sheep and 147 cattle). The samples were evaluated using an indirect ELISA Kit. The results showed seroprevalences of 60.4%, 31.7% and 12.2% in goats, sheep and cattle, respectively. Based on these results, Q fever could be considered as endemic in Gran Canaria island. Sanitary measures should be taken at the farm level to minimize the risk of exposure of *C. burnetii* to humans.

Introduction

Coxiella burnetii, an obligate intracellular pathogen, is the causative agent of Q fever, a zoonosis with worldwide occurrence (OIE, 2008). The reservoir of this bacterium is extensive and includes arthropods (mainly ticks) as well as many wild and domestic mammals and birds (Sawyer et al., 1987). With 170 patients reported in all Canary Islands until 2002, the overall seroprevalence in human population is estimated to be 21.5% (Bolaños et al., 2003). Gran Canaria island, which concentrates the highest livestock census in the Archipelago, showed also one of the highest seroprevalences (23.5%). However, there is no information about *Coxiella burnetii* infection in livestock in the islands. The purpose of this work was to assess the seroprevalence in ruminant species in Gran Canaria to devise sanitary measures in the farms to avoid contact of the population with the bacteria.

Materials and Methods

A total of 1249 ruminants (733 goats, 369 sheep and 147 cattle) belonging to different ecosystems of Gran Canaria

island were randomly selected for this study. The sample size was considered at 95% level of confidence, 5% of desired absolute precision and expected prevalence of 10% for cattle, 30% for sheep and 50% for goats. Blood samples were obtained from the jugular vein, sera were obtained by centrifugation at 1.800 g for 10 min and kept at 2–8°C until their analysis. An indirect ELISA Kit was used (Q fever Ruminants Serum; LSI, Lissieu-France) and determinations were performed according to the manufacturer's recommendations.

Results and Discussion

The overall seroprevalence obtained was 34.7% (60.4%, 31.7% and 12.2% in goats, sheep and cattle, respectively). The most affected areas in the island were those in which small ruminants, particularly goats, were raised (South and East of the island), while the North area, in which cattle are concentrated, showed the lowest prevalence. Based on these results, Q fever could be considered as endemic in Gran Canaria island. Cattle, sheep and goats are the primary reservoirs of *C. burnetii*, but usually clinical signs are not observed except abortions and reproduc-

tive disorders (Lang, 1990). Q fever in humans is principally transmitted by the respiratory route, by inhalation of desiccated aerosol particles, and through contact with infected animals and their reproductive tissues (OIE, 2008). Q fever outbreaks have resulted mainly from occupational exposure involving veterinarians, meat processing plant workers, sheep and dairy workers, livestock farmers, and researchers at facilities housing sheep (CDC, 2009). Sanitary measures should be taken at any facility to minimize the risk of exposure of *Coxiella burnetii* to humans. Finally, it is important to remember that *Coxiella burnetii* is a highly infectious agent that is rather resistant to heat and drying. This agent could be developed for use in biological warfare and is considered a potential terrorist threat (CDC, 2009).

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