APPARENT PREVALENCE OF ANTIBODIES TO COXIELLA BURNETII IN BULK TANK MILK OF DAIRY HERDS IN THE PROVINCE OF VICENZA, NORTH-EAST OF ITALY

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Objective of study: Q Fever is a zoonotic disease caused by C. burnetii, a gram-negative obligate intracellular bacterium, now recognized as being endemic worldwide. A high prevalence of infection in dairy cattle has been reported in several European countries. The aim of this study was to evaluate the apparent prevalence of antibodies to C. burnetii in bulk tank milk (BTM) in the Vicenza province, and the magnitude of C. burnetii elimination in BTM of seropositive dairy herds.

Materials and methods: 489 herds out of the 1488 dairy farms of the Vicenza province were selected for the survey. All the herds were members of the local Cattle Breeders Association which monitors their productive and reproductive traits on a monthly basis. During fall 2008, a BTM sample from each herd was collected, stored at -20°C, and tested for antibodies against C. burnetii with a commercial indirect ELISA test (LSI). Furthermore, a group of 80 samples were selected among the 290 seropositive ones (according to the ELISA s/p value), and tested for bacterial genome detection. DNA was extracted with a QIAamp DNA mini kit (QIAGEN) and detected by means of a commercial real-time PCR kit (ADIAVET ® COX REALTIME) on LightCycler 2.0 (Roche).

Results and discussion: Based on ELISA test results, the overall apparent prevalence resulted 59% (95%CI: 56-63%). Prevalence stratified by herd size was significantly higher (P< 0.01) in farms rearing > 50 cows compared to those rearing ≤50 cows: the proportion of positive herds was respectively 68% (95%CI: 61-75%) and 54% (95%CI: 49-60%). According to the magnitude of ELISA test reaction, the herds can be grouped into 3 levels of seropositivity: low, medium and high. In our survey 82% of positive samples were classified as low seropositive herds (0.3 < s/p value ≤ 1), 12% as medium (1 < s/p value ≤ 2) and none as highly. 76% of the 80 samples tested with PCR for C. burnetii gave positive results. 18 samples (23%) showed a ct value < 31, indicating a concentration of more than 10^3 bacteria/ml, according to the PCR kit. No significant association was found between the magnitude of ELISA s/p value, and the detection of C. burnetii DNA in milk.

Conclusion: This survey indicates a quite high level of Q Fever infection among dairy herds in the Vicenza province, despite the low density of sheep and goat flocks in the area. Furthermore the results of PCR showed the presence of C. burnetii DNA in BTM of a high proportion of seropositive herds.