ABSTRACT

TRISO PURNAWARMAN. Study of Q Fever in Chicken Eggs in Bogor Area: Veterinary Public Health’s Point of View. Under the direction of I WAYAN TEGUH WIBAWAN, FACHRIYAN HASMI PASARIBU and AGUS SETIYONO

Every year, Indonesia imports cattle and meat from Australia. Australia is the first country in the world where Query fever (Q fever) disease in abattoir workers was discovered and it is still endemic. Q fever is a disease that can be transmitted through food (foodborne disease) and it is categorized as zoonoses emerging infectious disease. This disease is caused by Coxiella burnetii (C. burnetii), which is an obligate intracellular pathogen, pleomorphic, resistant to physic-chemistry conditions and potentially used as biological weapons. Transmission to humans occurs through inhalation of dust particles from feces, urine and wool; direct infection from infected animals or tissues such as the rest of abortion, the placenta and the blood; and through the digestive tract from consuming unpasteurized milk and eggs.

C. burnetii was detected serologically and molecularly in Bali cattle, Brahman cross cattle, sheep and goats in the area of Bali and Bogor. Therefore, it is necessary to do a deeper study about its existence on chicken and eggs in Indonesia. This is important because the research results in Japan, Korea and the Philippines in 2003-2004 showed that 4.2% eggs were positive DNA C. burnetii.

This research was aimed (1) to know the existence of the DNA of C. burnetii in eggs, (2) to know the relationship between the presence of C. burnetii with the characteristics of the farm environment (sanitation, personal hygiene and biosecurity), and (3) to determine the sensitivity and specificity of the nested polymerase chain reaction (nested PCR) method compared with PCR to detect the DNA of C. burnetii.

Qiao modified method for extracting DNA of C. burnetii in egg yolk is capable to produce a high concentration and high level of DNA purity.

Assessment of C. burnetii DNA detection in 222 in commercial chicken eggs taken from sector 2 chicken farm and 130 local chicken eggs from sector 4 farm in Bogor area was done. The results shows that there wasn’t any C. burnetii DNA in 352 eggs sample which were tested with nested PCR method. It hadn’t been known the relation between farm environment (sanitation, personal hygiene and biosecurity) and the existence of the DNA of C. burnetii.

The sensitivity of nested PCR method to detect the DNA of C. burnetii reached the limit of detection up to 300 pg or it is 50 times more sensitive than PCR. In addition, PCR and nested PCR has high specificity (conserved) to detect C. burnetii. Two pairs of primers OMP1-OMP2 and OMP3-OMP4 are highly sensitive and specific of 21 strains C. burnetii and have been used as diagnostic method for Q fever disease in humans.

The results of this study can be used as initial information about the presence of C. burnetii in eggs in Bogor area. In order to determine the infection of C. burnetii in chicken farms, it is necessary to conduct further research, both serological and molecular, in egg-producing regions throughout Indonesia. Further research should be conducted in other poultry eggs such as quail and duck eggs. Besides that, it is necessary to do C. burnetii surveillance in imported cows from Australia so that a guidance control system to face the entry of exotic zoonoses into Indonesia can be compiled.

Key words: Coxiella burnetii, Chicken eggs, sensitivity and specificity, nested polymerase chain reaction.