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Project Title: The construction of southern region reference laboratory for *C. burnetii* in Taiwan
Project Number: DOH96-DC-29
Executing Institute: Centers for Disease Control
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P.I. Position Title: Director
P.I. Institute: The Fifth Branch

Abstract:

Q fever is a ubiquitous zoonosis caused by *Coxiella burnetii* which can occur in large outbreaks of acute infections and is a possible bioterrorism agent. In order to lessen the delay in diagnosing acute Q fever, we have developed single tube nested Real time PCR (STN-RT PCR), a rapid nested PCR assay that uses blood sampled early during the disease as a specimen. We used the repetitive, transposon-like element as the DNA target. We applied this method to the first blood samples taken from 84 patients diagnosed in our laboratory as having acute Q fever on the basis of the clinical manifestations and serology and to 86 controls. We compared STN-RT PCR to Real Time PCR used before. The sensitivity was 51.2% when used STN-RT but only 20.2% with prime Real time PCR. The both of methods had a specificity of 100%. In addition we used automatic DNA extraction machine to replace DNA extraction by hand and then combined STN-RT PCR. In 2007 routine diagnosis, a total of 93 confirmed Q fever patients were tested by this new protocol and the detection sensitivity was 60.2%.

In Taiwan, studies about seroprevalence of *C. burnetii* in certain groups at risk for Q fever infection were lacking. As a result, we undertake this study to investigate the seroprevalence and the risk factors for *C. burnetii* infection among these specific populations in southern Taiwan where Q fever is endemic. Univariate analysis revealed that male gender ($p=0.001$) and frequent goat contact ($p<0.001$) were the

risk factors for seropositivity of *C. burnetii* among these specific populations in southern Taiwan; and the later factor remained highly significant under multivariate logistic regression analysis ($p<0.001$).

Key words：*Coxiella burnetii*、single tube nested Real time PCR