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Project Title: The construction of southern region reference laboratory for *C. burnetii* in Taiwan

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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. The diagnosis of Q fever is difficult and relies mainly on serological examination, the most commonly used method being indirect immunofluorescence assay (IFA). Whole cell antigens are currently used in several serological methods, but are limited due to the hazardous nature of cultivation of *C. burnetii*. In this study, we reported the development of ELISA system that can be used to rapidly detect *C. burnetii* infections in acute-phase blood samples. In the ELISA test, we have been produced FtsZ, ompA, Ribosomal protein L9, chaperon, RecA, ABC transporter lipoprotein recombinant antigens from *C. burnetii* and identified six protein antigens by western blot analysis . These recombinant antigens can be used to detect *C. burnetii* specific antibodies in the serum samples from patients with *C. burnetii* infection. In the future, ELISA will replace traditional IFA method for early diagnosis of *C. burnetii* infection. This improvement will have great impact on the clinical treatment of patients with *C. burnetii* infections. In molecular typing, we designed 4 primer sets were used to detect the QpRS, QpH1, QpDG and QpDV. In Taiwan, QpRS plasmid-specific sequences was identified in 34 (34/105) of the serum samples. 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 risk factors for *C. burnetii* infection among these specific populations in southern Taiwan where Q fever is endemic. In order to know the questions, we designed questionnaire and investigated 221 cases from these groups. In multivariate logistic regression analysis, persons with frequent contact with goats had a 4.14 fold odds ratio (95%CI=1.69-10.07) of *C. burnetii* than other groups. Persons with clean the workplace 2-5 times 【OR=0.151 (95% CI=0.05-0.51)】 or 6-7 times 【OR=0.271 (95% CI=0.09-0.84)】 each week is a protection factor of *C. burnetii* infection. Moreover, we teach the knowledge of Q fever among these specific populations in southern Taiwan which classes hold by the agricultural politics unit.