

MOLECULAR CONFIRMATION OF *COXIELLA BURNETII* IN NATURALLY INFECTED ADULT CATTLE

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ABSTRACT : The current study was aimed to molecular detection of *Coxiella burnetii* in cattle of Al-Basra province for first time using the conventional polymerase chain reaction (PCR). Therefore, a total of 100 adult cows were selected randomly from different areas in Al-Basra province (Iraq) from October/2019 to May/2020 and subjected for jugular venous blood sampling. Targeting three specific genes for *C. burnetii*, the positive findings were 23% for *16SrRNA* gene, 16% for *IS1111A-transposase* gene, and 12% for *com1* gene. All positive samples by *IS1111A-transposase* and *com1* genes were also positives by *16SrRNA* gene. Based on study findings, *C. burnetii* infection is endemic in cattle population, and it is better to screen large numbers using various types of samples. Furthermore investigations are required to fully recognize epidemiology of *C. burnetii*, and factors that affect the environmental survival of the bacterium.

Key words : Q fever, lactating cow, polymerase chain reaction, Al-Basra, Iraq.

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INTRODUCTION

Coxiella burnetii is an obligatory intracellular bacterium resulting in an infectious zoonotic (Q fever) disease among several wild and domestic animals particularly cattle, goat and sheep, which considered as the main reservoirs for the disease (Baud and Greub, 2011). The bacterium can be transmitted by environmental contamination with milk, feces, urine, vaginal mucous, placental secretions and similar products from infected animals (Givens and Marley, 2008; Astobiza *et al*, 2011; Mohammed *et al*, 2014). Many studies reported that *C. burnetii* has marked affinity to mononuclear phagocytes, so that, it can be demonstrated readily in blood, lung, liver, kidney, and spleen of infected one during the acute phase of infection; and in glandular tissue of udder, gravid uterus, and placental tissues in chronic phases of many species involving cattle (Bouvery *et al*, 2003; Sobotta *et al*, 2017).

In cattle, natural infections appear as unapparent or dormant and the organisms may not be excreted until parturition occurs; however, there increasing evidences refer to that *C. burnetii* may associate with several reproductive disorders (Kim *et al*, 2006; Radostits *et al*,

2006). Furthermore, the outcome of Q fever in pregnant uterus includes abortion at late stage of pregnancy, failure to expel placenta, premature delivery, stillbirth, death of new-born, and weak offspring as well as the clinically normal progeny that may or may not be congenitally infected (Cabell, 2007; Rodolakis, 2009; Agerholm, 2013).

Due to unspecific or missing of clinical symptoms and/or lesions, laboratory testing is the only reliable way to confirm the presence of organism (Knap *et al*, 2019). Nowadays, there many direct and indirect assays have been developed for diagnosis of *C. burnetii* in different samples. Although, culture remains the gold standards test, it's technically difficult process, time consuming, rarely performed due to human health risk and the fastidious growth of organism (Plummer *et al*, 2018). In last decades, polymerase chain reaction (PCR) has proven to be highly sensitive and specific, simple, and reliable tool for detection of *Coxiella* in different clinical samples (Harris *et al*, 2014). In Iraq, there is rare available data concerned to *C. burnetii* infection in cattle population. Hence, the present study aims for molecular detection of the organism in adult lactating cows of Al-Basra province for first time using the PCR assay.