

# EFFECT OF *THEILERIA ANNULATA* INFECTION DETECTED BY QPCR TECHNIQUE AND SOME FACTORS ON HEMATOLOGICAL PARAMETERS IN THE IRAQI LOCAL COWS

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**ABSTRACT :** Across sectional study was carried out to investigate the prevalence of Theileriosis in the local cows in Baghdad - Iraq during the period from March to May 2017. The study included 126 blood samples of the local cows of both sexes which were selected randomly. Thirty samples were excluded because they are suspected to be infected with others parasites according to microscopic test. The rest numbers of samples (96; 56 females and 40 males) were examined by microscopic and real-time polymerase chain reaction (qPCR). The results of microscopic examination revealed that the prevalence of *Theileria annulata* was 33.33%, whereas the result of PCR technique was 57.29%. The results of comparison showed that however, the microscopic test have a high specificity (100%), but the sensitivity was too low (58.18%) and the degree of agreement ( $Kappa=0.54$ ) was a weak. The differences between the prevalence according to the two methods was significant ( $P<0.0001$ ), therefore, the microscopic test is not efficient for detection of theileria in the Iraqi local cows. Results also, showed that the effects of the status, age, sex, region, and month of data collection on some hematological parameters were significant ( $P<0.05$ ). The means of MCH (21.51 pg) and MCHC (43.35 g/dL) in the infected animals were significantly ( $P<0.05$ ) higher than the corresponding means (17.98 pg and 36.40 g/dL) in the non-infected.

**Key words :** Real-time P.C.R., microscopic examination, Iraqi local cows, *Theileria annulata*.

## INTRODUCTION

Cows are raised as livestock for beef and veal meat, and as dairy animals for milk and other dairy products, also their leathers are used in different manufactures. Theileriosis is a tick borne parasitic disease that caused by hemoprotozoan parasites belong the genus *Theileria* (T.), which generally infects ruminants especially cattle (wild and local) in tropical and subtropical regions (Nazifi *et al*, 2009 and Demessie and Derso, 2015). *Theileria* is obligate intracellular protozoan parasites transmitted by ticks and have complex life cycle in vertebrate and invertebrate hosts (OIE, 2014 and Sitotaw *et al*, 2014).

Theileriosis are an extremely lethal and debilitating disease and acts as a major constraint on livestock production in many developing countries (Gul *et al*, 2015 and Saeed *et al*, 2016).

It's usually causes serious economic losses by effect on domesticated animal's production with high morbidity and mortality rates, which is hampering the development of the domestic cattle industry. The globe loss has been valued above 7 billion US \$ per years (Ahmed *et al*, 2002 and Ica *et al*, 2007), while, in India alone, around 10 million cattle are at hazard for the disease with an

annual financial loss about 800 million US \$ (Brown, 2008), and about 250 million cattle are at risk (Slodki *et al*, 2011 and Erdemir *et al*, 2012).

The diagnosis and identification of blood parasites is becoming ever more important with the increase in the imported parasitic disease in the temperate zone. Any clinical hematology laboratory can expect to be called upon to diagnose these parasites, and a high level of competence is required (Kaufmann, 2013).

The diagnosis of tropical theileriosis is mainly done on the basis of clinical signs and confirmed by microscopic examination of blood Giemsa stained, lymph smears for detecting the piroplasms in erythrocytes and schizonts in lymphocytes respectively (Nourollahi-Fard *et al*, 2013).

Molecular methods have been developed as accurate and rapid identification of *Theileria* sp. in animals having negative serological tests that can still infested ticks (Zaemi *et al*, 2011 and Ghaemi *et al*, 2012). Iraq is one of many countries complaining from Tropical Theileriosis and this disease is represented of the really challenge. Many epidemiological studies was performed and indicated that the disease is endemic in many provinces such as Mosul, Diyala, Baghdad, Hilla, Qadisiya, samawa