

## DETECTION OF *THEILERIA* INFECTION IN DROMEDARY CAMELS

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### SUMMARY

Camels are important source of meat and wool. These products depend mainly on the general health conditions which are affected by infection with several diseases such as blood parasites. The examination was done on 215 camels by Giemsa stained blood films prepared from the blood collected from imported camels slaughtered at three slaughter house in Tripoli-Libya (February –

July 2008). Out of 215 examined camels, 14 (6.5%) were infected with *Theileria* spp. The morphology of the detected *Theileria* in the erythrocytes was oval forms. The main size measured 1.3 x 0.4  $\mu$ m. The schizonts inside the lymphocyte were irregular in shape and showed varying number of red granules. *Hyalomma dromedarii* were identified from the camels infected with *Theileria*.

### 1. INTRODUCTION

Camels are considered to be of the valuable sources for meat, milk, wool industry. Blood parasites in camels may cause many problems. They might not only a direct cause of death but also they affect the general condition of camels (Higgins, 1986). *Theileriosis* is one of tick borne diseases group of mammalian host such as cattle, sheep, goat and wild ruminant (Barnett, 1960 and

El-Begawey, 1983). Infection with *Theileria* spp. may cause lymphoproliferative disorders which may lead to anemia, leucopenia and affect the resistance of animals (El-Sergany et al. 1991). *Theileria camelensis* is an intra-erythrocytic protozoan parasite infecting camels. Its presumed vector is (*Hyalomma dromedarii* Hoogstraal et al 1981, Boid et al.1985 and Barnett 1977) mentioned

that camels in Egypt and Somalia were infected with *Theileria camelensis*. The parasite in the erythrocytes were rod and ring shaped, the camels are apparently healthy in spite of *Theileria* infection (Nassar, 1992). Ticks (Ixodidae) play a significant role as vectors of pathogens of domestic animals. The major losses caused by ticks are related to transmission of protozoan parasites. These include agents of theileriosis and

babesiosis. *H. dromedarii* is widely distributed in North Africa, the northern regions of West, Central, and East Africa, Arabia, Asia Minor, the Middle East, and Central and South Asia (Apanaskevich et al. 2008). Studies on theileriosis in camels are very scarce and little information had been provided. The objective of the present work was done to deal with *Theileria* infection in camels and identification of ticks.

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## 2. MATERIAL AND METHODS

### 2.1. Blood films

Three ml blood was collected from the jugular vein of each of the 215 imported camels (February – July 2008) in clean test tubes containing ethylene diamine tetra acetic acid (EDTA) as anticoagulant. Thin and thick blood smears were prepared from each blood samples, dried, fixed with absolute alcohol and then stained with Giemsa stain and examined microscopically.

### 2.2. Preparation of ticks for identification

Ticks were collected from the same examined camels using special forceps; preserved in glass vials containing glycerine alcohol and stored for

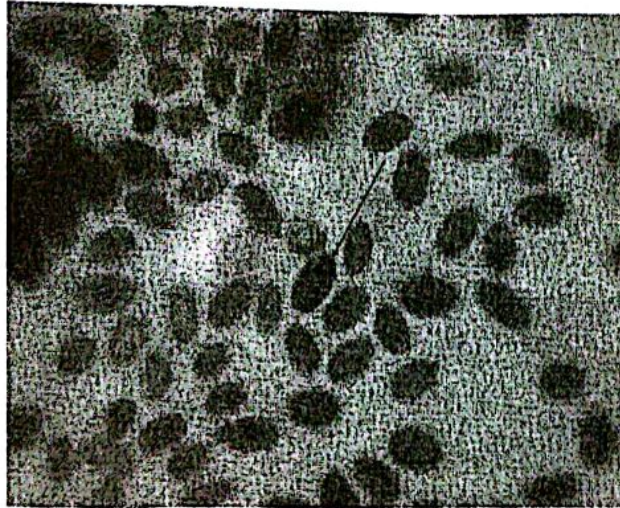
further studies according to Engelbrech et al. (1965). Ticks were placed in potassium hydroxide (10%) for 24 hours, after which the abdomen of each parasite was punctured with needle, washed in distilled water, dehydrated in ascending grades of ethyl alcohol, cleaned in clove oil and xylene, then mounted in Canada balsam. Ticks were identified using the identification key of Hoogstraal, H. (1956), Hoogstraal, Kaiser (1958) and Apanaskevich et al. (2008).

## 3. Results

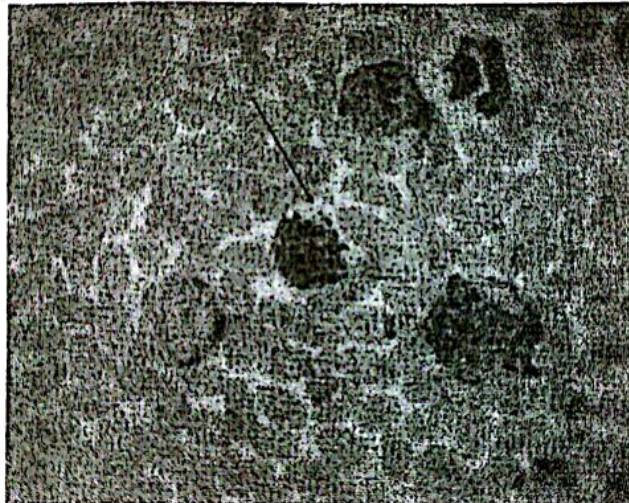
The examination of 215 camels Giemsa stained blood films revealed that 14 (6.5%) were infected with *Theileria* spp. The morphology of the detected *Theileria* in the erythrocytes was oval forms. The main size measured 1.3 x 0.4  $\mu$ m

(figure 1). In addition, the schizonts in the lymphocyte were irregular in shape with varying number of red granules (figure 2). Ticks collected from the camels examined were identified as *Hyalomma dromedarii*.





**Figure (1):** *Theileria* species inside camel erythrocyte in Giemsa stained blood smear (X1000).



**Figure (2):** *Theileria* schizont inside camel lymphocyte in Giemsa stained blood smear (X1000).

#### 4. DISCUSSION

Regarding the present work on camels, examination of 215 blood smears from camels revealed that 14 (6.5%) were found infected with *Theileria* species only. This low incidence might be due to low parasitaemia. This result was similar to that obtained by Mahran, (2004)

(6.2%) in Egypt. In addition, zero incidence was recorded in Bahrain (Ibrahim et al., 1992) and in Pakistan (Butt et al., 1996). High incidence of *Theileria* infection in camels were recorded in Egypt, 30% (Nassar, 1992) ; in India, 26.1% (Mishra et al.,



1987). These differences might be due to management, tick control and endemic situation where the majority of the infection was chronic with low parasitaemia. The examination of blood films in the current work revealed two forms of *Theileria* intra-erythrocytic form and schizont in lymphocytes. These results similar to that seen by Nassar (1992), El-Refaii et al. (1998) and Mazad and Khalaf (2002). Ticks collected from the camels examined were identified *H.*

*dromedarii*. Gabaj et al. (1992) recorded *H. dromedarii* on camels, *H. impeltatum* on sheep and *H. excavatum* on cattle in Libya. The tick found most frequently overall was *H. dromedarii*. In Tunisia, *H. dromedarii* were collected from domestic ruminants in the arid and desertic zones (Bouattour et al. 1999). Examination of camels in Egypt, identified *H. dromedarii* (Mazad and Khalaf, 2002).

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## الكشف عن إصابة الجمال ذات السنم الواحد بطفيل التيليريا

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تمثل الإبل أهمية اقتصادية من حيث المساهمة في توفير البروتين الحيواني كغذاء للإنسان في ليبيا. وتعتبر طفيليات الدم من الأمراض المعدية التي تصيب الإبل وتؤثر على صحتها ومعدلات إنتاجياتها، ولندرة الدراسات السابقة على طفيليات الدم التي تصيب الإبل في ليبيا. فقد تم إجراء دراسة على ٢١٥ عينة دم من جمال مستوردة وتربى في ليبيا تم تجميعها من عدد ثلاثة سلخانات بمدينة طرابلس على مدى ستة أشهر (فبراير- يوليو ٢٠٠٨). فحصت المساحات الدموية من هذه العينات والمصبوغة بصبغة الجيمسا لمعرفة معدل الإصابة بطفيل التيليريا. أوضحت النتائج أن ١٤ (٦,٥%) منهم مصابة بطفيل التيليريا (*Theileria camelensis*). الشكل الظاهري للطفيل بيضويا داخل كرات الدم الحمراء وكان متوسط الحجم  $١,٣ \times ٠,٤$  ميكرون أما الشايزونت في كرات الدم البيضاء (اللمفوسايت) غير منتظم الشكل ويحتوى على حبيبات حمراء مختلفة الأحجام. كما تم التعرف على نوع القراد الذي تم جمعه من نفس الجمال التي أخضعت للدراسة وكان من نوع الهيالوما دروميداري *Hyalomma dromedarii*.