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## The Occurrence and Prevalence of *Haemonchus Longistipes* in Dromedaries (*Camelus dromedarius*) in Al-Ahsa Area, Saudi Arabia

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### Abstract:

A total of 147 dromedaries (*Camelus dromedarius*) brought to the veterinary hospital of the college of Veterinary Medicine, King Faisal University from Al-Ahsa area were examined between February 2010 and January 2011. Coproscopy examination using fecal flotation method revealed 13.6% of the dromedaries to be harboring strongyle type nematode eggs. 11.6% of these positive cases were reported in wet and cold season while only 2% were reported in dry and hot season. The prevalence in winter season was 17.2% and in summer season was only 6.3%. Copro-culture of dromedaries' feces revealed the presence of *Haemonchus* third stage larvae. In addition, abomasums of four camels slaughtered in the central abattoir of Al-Ahsa were examined for the presence and identification of the parasite. Postmortem examination revealed the presence of *Haemonchus longistipes* in these camels. The prevalence observed in the present study reflects the efficacy of strategic de-worming policy adopted in the study area and necessitates the continuation of this strategy for improving the health and productivity of the camels.

**Key Words:** *Haemonchus longistipes*, Coproscopy, Copro-culture, Fecal flotation, Abomasum, de-worming, Larvae, Postmortem.

### Introduction:

The camel is the principal domestic animal in Saudi Arabia and its meat and milk constitute a vital source of animal proteins to nomads and city dwellers.

Cameline haemonchosis caused by *H. longistipes* has an extremely wide geographical range particularly in tropical and subtropical areas, including Saudi Arabia. Apart from few studies conducted by El Bihari and Kawasmah (1980); and Hussein and Hussein (1985) on the occurrence and incidence of *H. longistipes* in Saudi Arabia, this parasite received no

attention. This worm occurs in the abomasum of the infected camels sucking blood from the mucosal vessels leading to hemorrhagic anemia, a characteristic feature of the disease. The larvae develop the piercing lancet just before the final moult enabling them to obtain blood from the blood vessels (Urquhart *et al.*, 2006).

The pre-parasitic stages are found on pasture and the infective stage is reached in less than a week under favorable conditions. Infection takes place through ingestion of these infective larvae from pasture. Browsing animals, such as camels, are highly susceptible to infection particularly when they derive their entire food intake from pasture as in most parts of Saudi Arabia. The disease could be acute or mostly chronic, and is characterized by anemia, variable degrees of edema and progressive weight loss (Soulsby, 1986).

Diagnosis of infection is based on history and clinical symptoms (Urquhart *et al.*, 2006) and demonstration of eggs by routine or quantitative fecal flotation methods (Zajac and Conboy, 2006). Fecal examination utilizing concentration techniques for the diagnosis of parasitic infections is probably the most common laboratory procedure performed in veterinary practice. It can reveal the presence of parasites in several body systems. Purified *H. longistipes* antigens have recently been used in immunoassays for diagnosis of infection (El Bahy *et al.*, 2007).

The eggs of *H. longistipes* are similar to those of other strongylid parasites. Copro-culture for identification of infective third-stage larvae is a useful tool for generic diagnosis.

The present study was designed to investigate the occurrence and prevalence of *H. longistipes* in Al-Ahsa area of Saudi Arabia through application of fecal examination techniques. Results obtained from such study could help planning effective control measures for this parasite.

## **Materials and Methods:**

### **Study Area:**

Al-Ahsa area is located in the Eastern Province of Saudi Arabia that is 5-160 m above sea level and is hot and humid in summer, cold with some rainfall in winter. The annual average temperature is 25°C, and the high temperature period starts in May and increases in June, July, and August reaching 45°C. January and February are the coldest months of the year, as the temperature may reach 10°C. The humidity is very high in the region.

### Fecal examination:

Fecal samples were collected directly from the rectum of dromedaries brought to the veterinary clinic, placed in universal sampling bottles and sent to the laboratory. The samples were examined by fecal flotation method (Zajac and Conboy, 2006) within 30 minutes after collection using a saturated solution of sodium chloride as the floating medium.

Copro-cultures (Soulsby, 1986) were made from some of the positive fecal samples for harvesting the third-stage larvae of nematode parasites.

### Necropsy examination:

Following slaughter of camels at Al-Ahsa Central Abattoir the abomasums of 4 camels were collected during October 2010. Each abomasum was cut longitudinally and the mucosa examined and scraped carefully to remove any adhering worms. The contents of each abomasum were washed in a tray using tap water. The entire washings were completely examined to find the parasites. Identification was conducted according to Soulsby (1986).

### Results:

Out of the 147 camels examined during the study period, 20 cases (13.6%) were positive for nematode eggs in their feces. The infection rate during winter (17.2%) was higher than that reported in summer (6.3%) (Table 1).

Table (1)  
Seasonal Prevalence of *Haemonchus longistipes* in Al-Ahsa.

Season	Sample size	Infected animals and infection rate
Winter	99	17 (17.2%)
Summer	48	3 (6.3%)
Total	147	20 (13.6%)

During winter the highest infection rate was reported in October (28%), followed by April (20%), March (11.1%) and then November (6.7%). While during summer, infection was reported only during May (15.8%) (Table 2).

Table (2)  
Monthly infection Rate of *H. longistipes* in camels in Al-Ahsa.

Month	Sample size	Infected animals and infection rate
October	25	7 (28%)
November	30	2 (6.7%)
March	9	1 (11.1%)
April	35	7 (20%)
May	19	3 (15.8%)

Third-stage larvae recovered from feces of infected camels by copro-culture belong to the genus *Haemonchus* and adult worms detected in the abomasums of examined camels were found to belong only to *Haemonchus longistipes*.

### Discussion:

Apart from the work carried out by El Bihari and Kawasmah in 1980, no study was conducted on the occurrence and prevalence of *Haemonchus longistipes* in camels in Al-Ahsa area of Saudi Arabia. The present study comprised a 1-year survey with the aim of determining the prevalence and seasonal incidence of *H. longistipes* in Al-Ahsa camels. From February 2010 to January 2011, fecal samples were collected directly from the rectum of camels in the study area. From 147 camels examined, 13.6% were infected. This prevalence is lower than that reported by EL Bihari and Kawasmah (1980) in Hofuf, possibly due to extensive use of anthelmintic therapy over the past 30 years. The prevalence is also lower than that in Ethiopian and Jordanian camels (Bekele, 2002 and Sharrif *et al.*, 1997 respectively). However, our finding is similar to that reported for *H. longistipes* in Iranian camels by Borji *et al* (2010) as well as in camels in United Arab Emirates (El Khawad *et al.*, 1992 and Moustafa *et al.*, 2003). The prevalence is known to vary from region to region and from season to season (Higgins, 1983).

Seasonal variation in the prevalence of the parasite was observed in the present study. The prevalence was higher in winter compared to summer. This might be attributed to rainfall and high humidity usually occurring in winter in the study area; these conditions are necessary for the survival of infective larvae in pasture. Larvae of *H. longistipes* were detected only during rainy season in Butana area of Eastern Sudan (Magzoub *et al.*, 1990). This seasonality is in agreement with that reported in camels elsewhere

(Higgins, 1983; Arzoun *et al.*, 1984; Abdel Rahman *et al.*, 2001) and these worms were found to survive the dry season as hypobiotic larvae in the abomasums of infected camels (Saleem, 1992).

In conclusion, data obtained from the present study showed that, strategic de-worming of camels with anthelmintics should be applied immediately before October through April. Nevertheless, the present study reflects the efficacy of the active policy adopted at the study area over the last thirty years for combating camel haemonchosis and the awareness of local citizens with camel health and fitness.

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## تواجد ودرجة انتشار دودة المعدة في الجمال بمنطقة الأحساء بالمملكة العربية السعودية

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### الملخص:

تم فحص 147 عينة من براز الجمال بالمستشفى البيطري لكلية الطب البيطري والثروة الحيوانية بالأحساء خلال الفترة من فبراير 2010 إلى يناير 2011. الفحص المجهرى لنتائج اختبار تعويم البراز كشف أن نسبة 13.6% من هذه الجمال مصابة ببديدان الإسترونقايل. النسبة العالية من هذه الإصابة (11.6%) سجلت في الفصل البارد والرطب من العام بينما بلغت نسبة الإصابة في الفصل الحار والجاف 2% فقط. فحص اليرقة الثالثة لهذه الديدان ومعاينة الديدان البالغة بمعدة الجمال المصابة أثبت أن هذه الجمال مصابة بدودة الهمونكس لونقستاييس. بلغت درجة انتشار المرض 17.2% في فصل الشتاء و6.3% في فصل الصيف. هذه الدرجة المتدنية لانتشار المرض تعكس فعالية الاستراتيجية المتبعة بمنطقة الأحساء للقضاء على الديدان كما تستلزم الاستمرار في هذه الاستراتيجية لتحسين صحة وإنتاجية الجمال بالمنطقة.