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PARASITOLOGICAL STUDIES ON ABOMASAL NEMATODES OF SUDANESE CAMELS SLAUGHTERED AT CAIRO ABATTOIR WITH SPECIAL REFERENCE TO THEIR SEASONALITY

R.A.A., EID
Animal Health Research Institute , Dokki.

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SUMMARY

At Cairo abattoir , the abomasa of 141 Sudanese camels were examined for abomasal nematodes, allover a one year period, extended from July 1995 to June 96. The camels were moderately infested (53.2%) with these parasites. Haemonchus spp. represented the bulk of these infestations (48.9%), Trichostrongylus spp. were of low prevalence (10.6%), while Impalaia aegyptiaca was of much lower prevalence (4.3%). Spring season showed the highest prevalence with the abomasal nematodes (88.9%), while Impalaia aegyptiaca was only prevalent during that season. T.longispicularis was recovered in one case only from camel's abomasa.

It was concluded that the problem of parasitic gastritis in Sudanese camels, is mainly a "haemonchosis" problem.

The author suggests more future studies about the nature and the epizootology of Impalaia spp. It was concluded also that we must pay attention to the possibility of being camels as reservoirs for the abomasal nematodes transmitting them to the farm animals (sheep, goat, cattle and buffaloes), as T.axei, T. longispicularis and H.contortus, which are recovered from camels in this study, are principally parasities of farm animals. Finally, it was concluded to emphasize on the necessity of drenching anthelmintics to the camels in North Sudan periodically allover the year, especially during spring, as the camel breeders there, usually neglect these measures.

INTRODUCTION

The one-humped camel (Camelus dromedarius) is the only species of camels presents in Sudan and in Egypt. A large number of camels is imported from Sudan to Egypt each year for slaughtering. This represents a strategic importance for supplying a large population of the poor Egyptian people with animal protein, as it is proportionally, of low price.

Sudan is of the well-known camel raising countries and camels in this country are kept and raised in its northern provinces only, which

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constitute the main bulk of camels slaughtered at Cairo abattoirs.

Parasitic gastroenteritis , especially haemonchosis, is a well-known problem is Sudanese camels (Soliman 1960 b), affectingg them in outbreaks attended with heavy losses.

Hence, it was the idea of this work, to explore in a fully complete picture, allover a complete year period, the nature of those infestations which have not been fully explored before.

MATERIAL AND METHODS

Animals:

Sudanese camels slaughtered at the main Cairo abattoir were the animals chosen for this study. Once a week 2-4 camels were selected randomly from both sexes, aged 3-5 years old, during the period of one year which extended from July 1995 to June 1996. A total of 141 camels were used for obtaining the samples.

II- Parasitological techniques:

After slaughtering and evasceration, the abomasum of each animal was tied at both ends and separated from the other viscera, with its full contents. At the labotatory, each abomasum was slit opened. The abomasal contents,, together with a superficial mucosal scraping, were collected in a bucket under running tap water. The recovered worms were counted according to Skerman and Hillard (1966), and identified according to Soliman (1956), Yamaguti (1961), Levine (1980) and Soulsby (1982). Permanent preparations of the recovered worms were made using glycerin-gelatin.

RESULTS

1- Recovered worms:

The recovered worms from the infested camel were all belonging to family Trichostrongylidae subfamily Trichostrongylinae (Haemonchus spp and Trichostrongylus spp.) and subfamily Viannaiinae (Impalaia spp.). The recorded species were 5: Haemonchus longistipes, H. contortus, Trichostrongylus axei, T.longispicularis and Impalaia aegytiaca (Figures III,IV and V,VI and VII).

II. Seasonal prevalence:

It was noticed (Table 1) that the highest prevalence of all recovered genera was during spring. The abomasal nematodes were moderately prevalent during the rest of the year, except Impalaia aegyptiaca which was only prevalent during spring and was absent allover the rest of the year. It was clear that Haemonchus spp. represented the bulk of the recovered abomasal nematodes (Table 1, Fguer 1).

III. Seasonal Intensity:

Haemonchus spp were highly intensive most of the year, while Trichostronglus spp. were only of moderate intensity during spring and were of low intensity allover the rest of the year. Impalaia aegypticae was only prevalent during spring and was of moderate intensity in this season (Table II, Figure II).

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Table (I): Seasonal rate of infestation with the abomasal nematodes in Sudanese camels,(%)

Worms / Season	No. examined	No. infested	% of infestation	Cases with Haemonchus spp.	%	Cases with Trichostrongylus spp.	%	Cases with Impalaia aegyptiaca	%
Summer	54	27	50 %	27	50 %	3	5.6 %	0	0
Autumn	30	9	30 %	9	30 %	3	10 %	0	0
Winter	30	15	50 %	12	40 %	3	10 %	0	0
Spring	27	24	88.9%	21	77.8%	6	22.2%	6	22.2%
Total	141	75	53.2%	69	48.9%	15	10.6 %	6	4.3%

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Table (II): Seasonal intensity of infestation with the abomasal nematodes in Sudanese camels (Worm/animal).

Worms / Season	Haemonchus spp.	Tricostrongylus spp.	Impalaia aegyptiaca	Total abomasal worms
Summer	1513	80	0	1522
Autumn	853	40	0	333
Winter	120	50	0	106
Spring	815	220	117	938
Average per year	924	123	117	933

Table III: Incidence of the different types of infestation with the abomasal nematodes

Type of infestation	Trichostrongylus spp. only	Haemonchus spp. only	Mixed Tr + H.	Mixed Tr. + I.	Mixed H. + I.	Total
No. of infested cases	2	58	9	4	2	75
% of infested cases	2.7	77.2	12	5.4	2.7	100

Tr. = Trichostrongylus.
H. = Haemonchus.
I. = Impalaia

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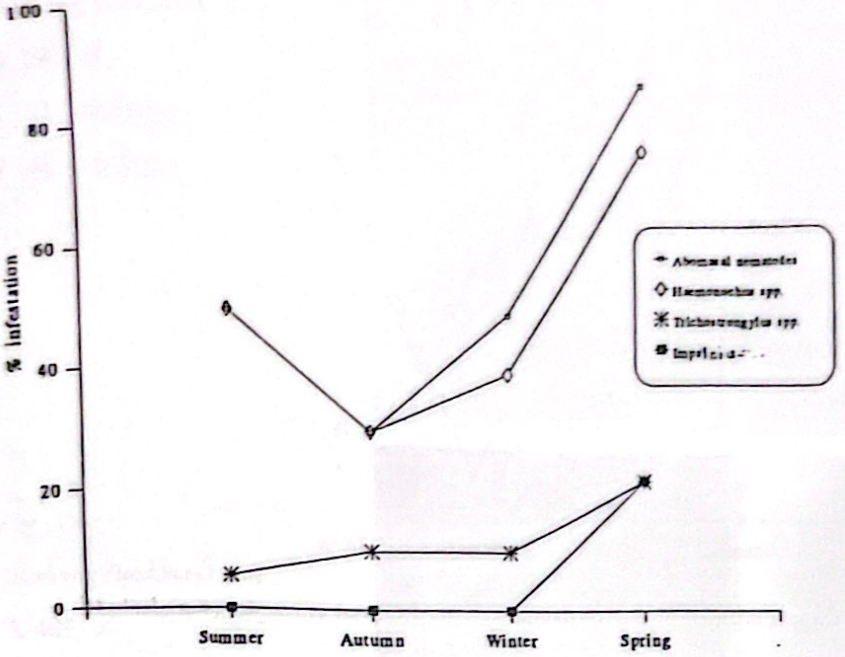

Fig. I-A. Seasonal rate of infestation with the abomasal nematodes %

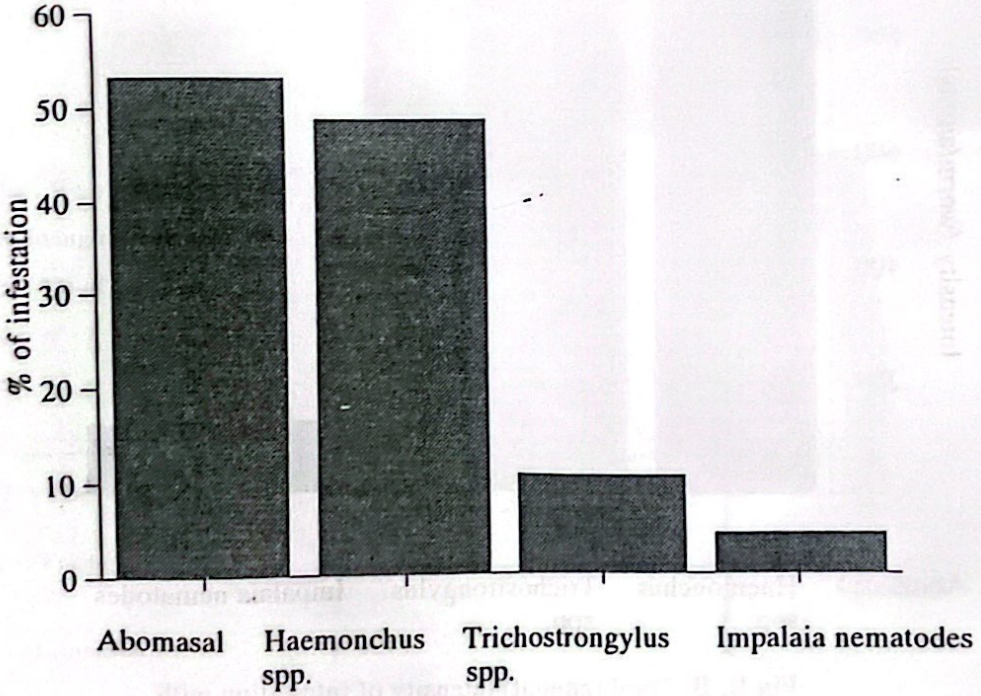

Fig I. B. Total (annual) rate of infestation with the abomasal nematodes (worm/animal)

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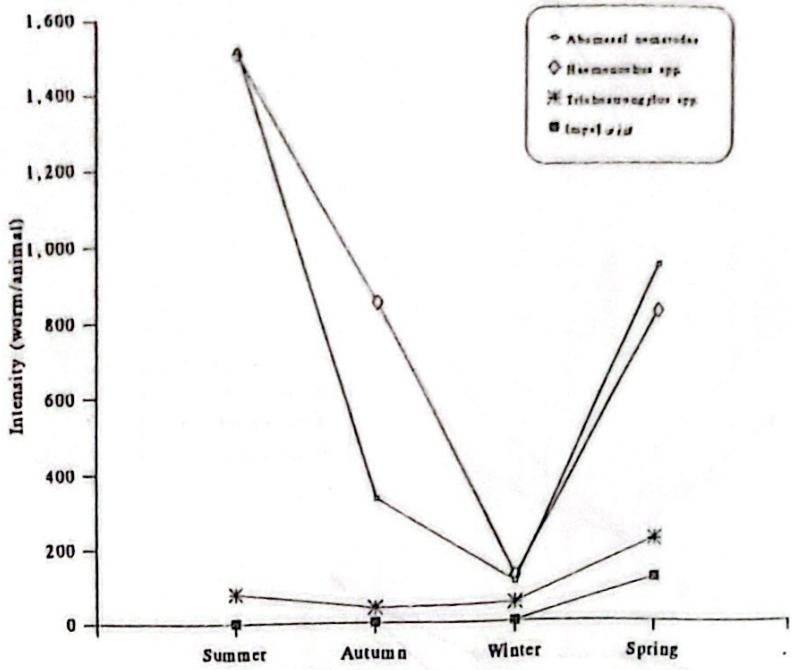

Fig. II-A. Seasonal intensity of the infestation with the abomasal nematodes (worm/animal)

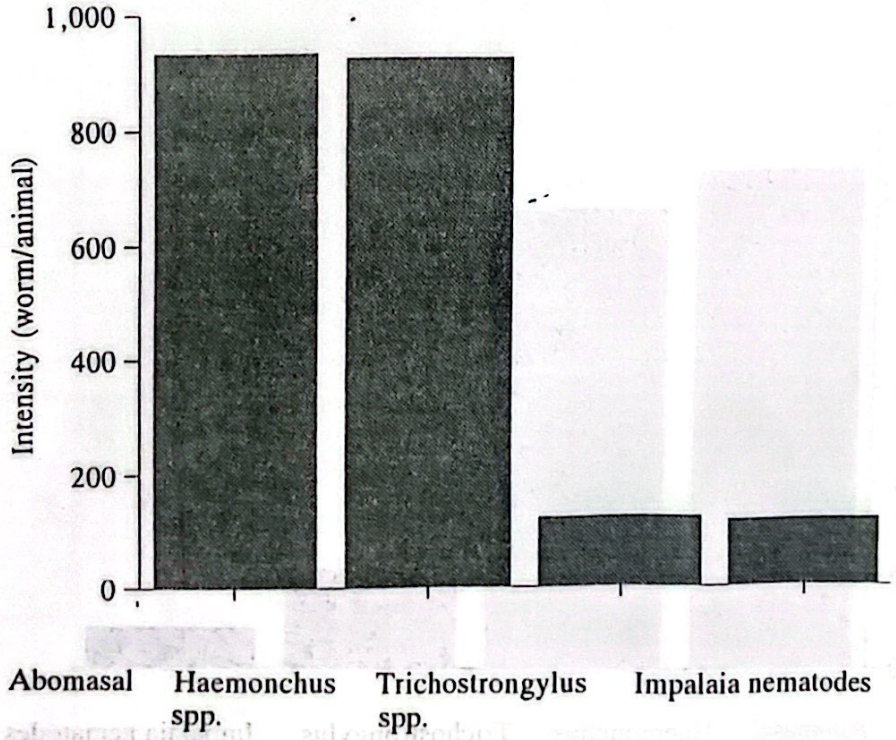

Fig II. B. Total (annual) intensity of infestation with abomasal nematodes (worm/animal)

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Fig. III :
Showing the distal end
(X 100) of
A : H. longistipes
B : H. contortus

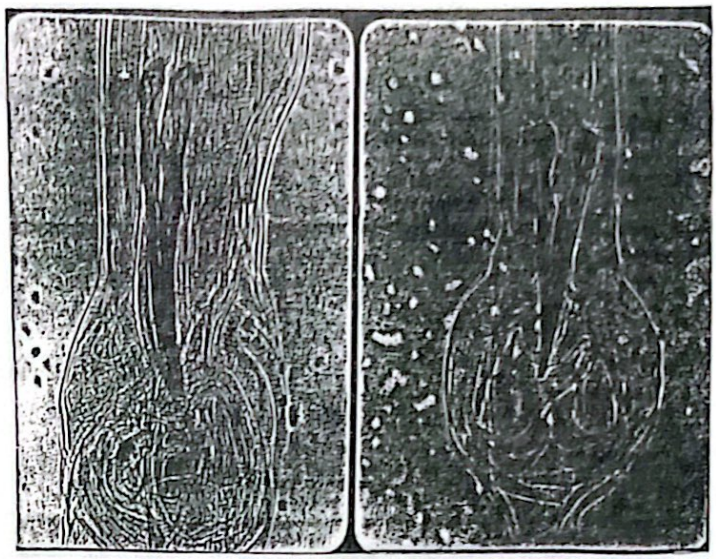


Fig . IV :
Showing the distal end
(X 400) of
C : Tr. longispicularis
D : Tr. axei

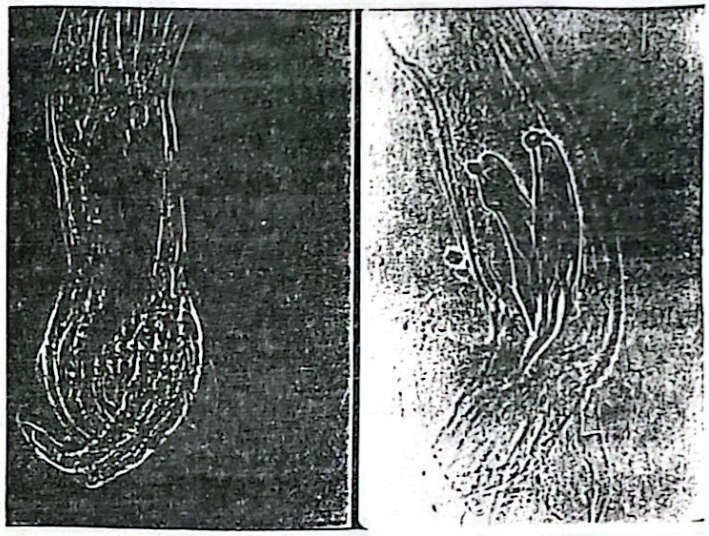
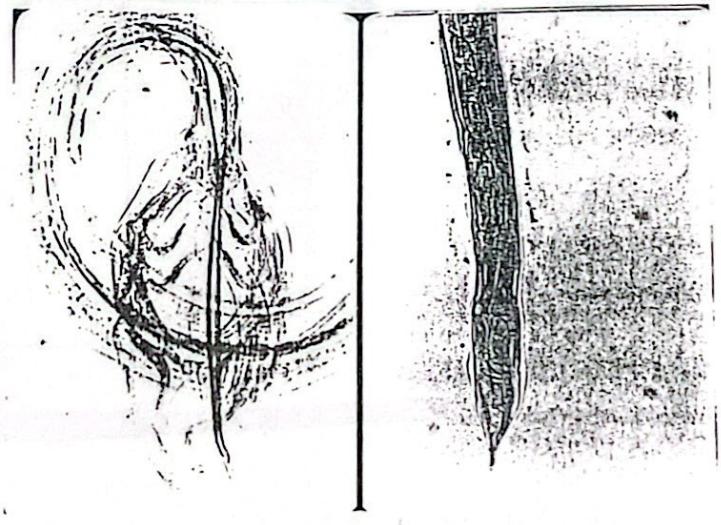


Fig . V :
Showing the distal end
(X 100) of
E : ♂ I. aegyptiaca
F : ♀ I. aegyptiaca



H. = Haemonchus ,

Tr = Trichostrongylus ,

I. = Impalaia.

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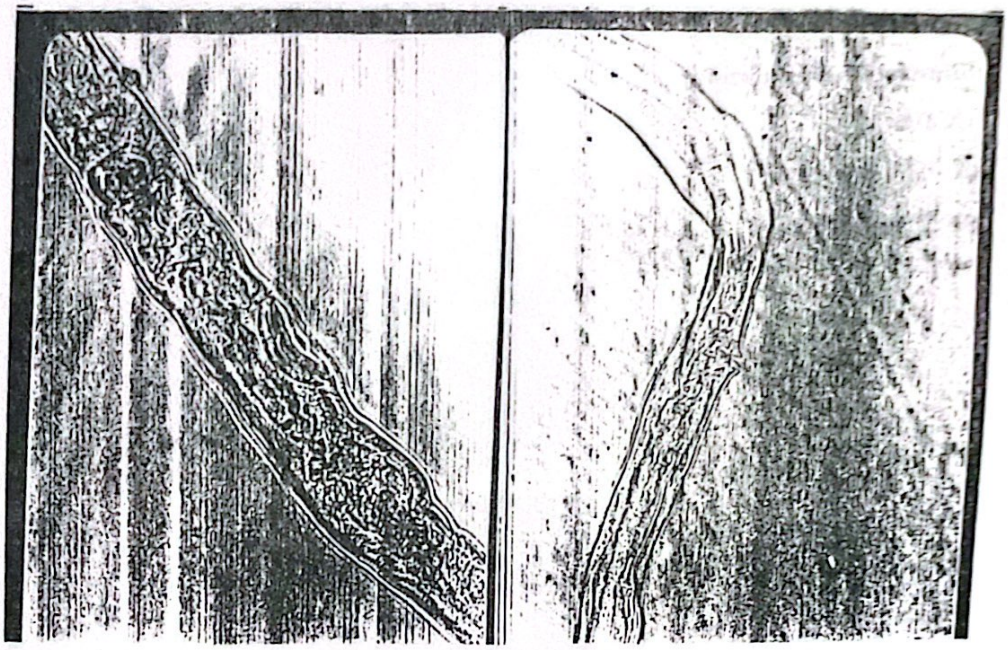

Fig. VI : Vulvar region of A : ♀ T. axei B :♀Trichostrongylus longispicularis
(X 400) (X 100)

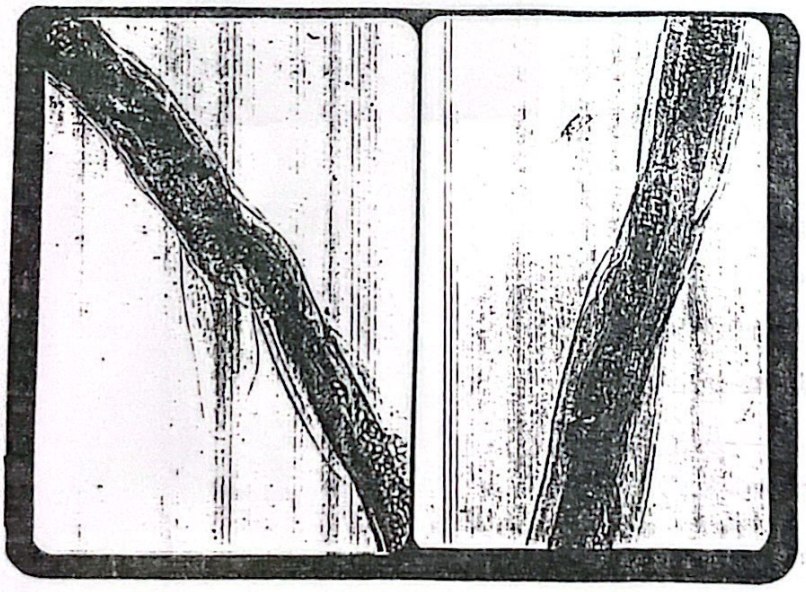

Fig : VII : Vulvar region of A : ♀ Haemonchus contortus B :♀ H. Longistipes
(X 40) (X 40)

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DISCUSSION

I- Recovered species:

All the recovered species in this study were previously recorded in both Sudanese (Soliman, 1960 b and 1962) and Egyptian (Selim and Rahman, 1972) camels. But it was surprising to find T.longispicularis in the abomasum of one case, out of the 141 examined camels. It is well known that T.longispicularis is a parasite of the small intestine, but Levine (1980) stated that it may occasionally be found in the abomasum. Levine's proposal is in agreement with our finding (0.7%). Also, the author noticed the absence of the very famous abomasal nematodes i.e. Ostertagia spp. from examined abomasa in this study. Many authors in countries of generally extremely hot climates had not recovered them before (El-Bihari, 1986 in Saudi Arabia, Abdul-Salam and Farah, 1988 in Kuwait and Onyali and Onwuliri, 1989 in Nigeria), which is in agreement with our result. Probably this could be explained by the fact that Ostertagia spp. have the tendency to flourish in cold climates (Bairden et al., 1979), and this explains their absence in Sudanese camels, in this study.

II. Seasonal dynamics:

All the recovered abomasal nematodes in this study showed the highest pevalence in Sring, which could be explained by the moderate, suitable temperature dominating this season in Sudan, which enhances the development of the worms. This is in agreement with Abdul-Salam and Farah, 1988 in Kuwait, who recorded abrupt increase in the worm burdens of camels during spring. This attracted our attention to the necessity of drenching anthelmintics to the camels, especially during the spring.

Impalaia aegyptiaca in this study, showed a unique pattern of seasonal distribution as it was only prevalent during spring, and was completely absent during the rest of the year. This could be explained by that, these worms may be senstive to the fluctuations of atmospheric temperatures, and so are only prevalent during spring, the very modest season.

III- Prevalence and intensity:

Soliman (a962) stated that H.longistipes is the principal helminth parasite in Sudanese camels, and that the infestation rate with Haemonchus spp. was 48.3%, which is in agreement with the result of this study (48.9%), where haemonchosis represented the bluk of infestation with the abomasal nematodes. Arzoun et al. (1984 a) reported a fairly high infestation rate with Haemonchus spp. in Sudanese camels at the beginning of spring (89%), which was reduced to 64% during the dry season (summer). These findings are in complete agreement with the results of this study, where the previously mentioned rates we e 78% and 50%, respectively.

Higher rates of infestation with haemonchosis, up to 100%, were recorded in Nigerian camels (Onyali and Onwuliri, 1989), at the highly humid area of Chad. Fairly lower rates of infestation were recorded in Egyptian deserty (Selim and Rahman, 1972), Iraqi (Altaif, 1974) Kuwati camels (Abdul-Salam and Farah, 1988), which

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were 8.6%, 8% and 1.7%, respectively. Our findings represent the medium value between the above two extremities (84.9%), which could be explained by the fact that Haemonchus spp. have flourished in hot humid areas and in loamy soil (mixed mud and sand, as in Nigeria) while their prevalence is minimized in low humid (arid) weather and in sandy soil (Misra & Ruprah, 1972a and Tripathi, 1974) as in Kuwait, South Iraq and Egyptian dese rts. Northern Sudanese climates represent the medium level between the above two mentioned ones, and so the infestation rate with the same behaviour of its climates. The annual intensity of Haemonchus spp. in Sudanese camels in this study was 924 worm/animal, which is considered a heavy load (Skerman and Hillard, 1966), and it is fairly higher than that recorded in Nigerian camels by Onyali and Onwuliri , 1989 (285 W/an), in spite of having lesser prevalence rate than that recorded in their study. This could be explaned by the fact that camels in Sudan, especially those bred for selling in the Egyptian markets, are kept in large crowded groups, for economical purposes, which in turn, amplifies the intensity of their infestation.

Trichostrongylus spp. were of low prevalence in Sudanese camels in this study (10.6%), which is in agreement with Soliman's (1962) finding, who reported them in 7% of Sudanese camels. This result is in contrast with the high rates reported from Egyptian deserty (Selim and Rahman, 1972) Iraqi (Altaif, 1974) and Nigerian camels (Onyali and Onwuliri, 1989), that reported rates of 46%, 68.1% and 66%, respectively. This unusual low rate of infestation with trichostrongylus spp. in sudanese camels could be explained by the unusual high rate of infestation with Haemonchus spp. (competetion phenomenon), which is attributed to the inhibitory effect of haemonchus spp. on the development of Trichostrongylus spp. (Blanchard et al., 1986). This explanation is supported by the finding that the infested cases with Haemonchus spp. alone were 58 (77.2%) cases, while those infested with both parasites were 9 (12%) cases (Table III). The annual intensity of infestation were Trichostrongylus spp. in this study was 123 W/an, which is low burden, which also could be explained by the heavy load with the competitive species, Haemonchus spp. in the examined animals.

Soliman (1962) found Impalaia spp. in 34.5% of the Sudanese camels. This result disagrees with our result which showed it in a fairly lower rate (4.3%). This big difference between the two rates may come from that all the previous works which have been done on Impalaia spp. were achieved during a short particular period, which might not represent the actual seasonal or annual rate of them, while this study followed up the parasite during a complete year period, for the first time. Some authors as El-Bihari (1986) considered Impalaia spp. as an occasional parasite of camels, which is in agreement with the results of this study. Add to this that many works, in many regions, had not recorded them at all (Abdul-Salam and Farah, 1988 in Kuait and Onyali & Onwuliri 1989, in Nigeria.).

Generally, the data which were obtained about Impalaia spp., from the previous works were conflicting and perplexed. So, while Ravaglia

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(1949) described a serious outbreak of disease due to Impalaia spp. in camels, imported from Libya to Somalia, (more than 1000 camels were involved), Soulsby (1965) stated that there was no evidence that this pesasite is associated with disease. Also, while we find that all the previous workers recorded I.aegyptiaca as an intestinal parasite of the camel, this study recorded it as an abomasal parasite.These results attract our attention to more future studies about this genus, explore its nature and its epizootology.

Finally, it was concluded that the problem of parasitic gastritis in the Sudanese camels slaughtered in Cairo abattoir is mainly a haemonchosis problem. This is in agreement with the finding of Singh et al. (1993) in India, who stated that Haemonchus spp. have been reported to cause to severe losses in camels.

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