Studies on Some Internal Helminth Parasites Infecting Camels

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6. Summery

Parasitism is of extreme significance and still a serious threat to the livestock economy worldwide. Among them, gastrointestinal helminth infections are recognized as a chief constraint to livestock production in terms of lowered productivity, mortality and high economic losses affecting the income of small holder dairy farming communities.

The current study revealed that the overall prevalence of gastrointestinal helminths was 12.6% in the study area through coprological analysis. Nematodes were found the most prevalent parasite's type followed by cestodes and trematodes (9.74%, 1.28%and1.54%), respectively.

The most prevalent eggs of GI helminths were *Trichuris* spp. (4.9%), followed by Strongyle-type (3.85%). Additionally, the coproculture analysis revealed the presence of eight species of nematodes larvae namely, *Trichostrongylus colubriformis*, *Chabertia ovina*, *Ostertagia ostertagi*, *Haemonchus* sp., *Oesophagostomum* spp., *Bunostomum* sp., *Nematodirus* sp. and firstly recorded *Cooperia* sp., in the study area. The recovered trematodes eggs belonged to *Fasciola* spp. (0.26%) and Paramphistomes (1.03%), while *Moniezia* spp. was the only tapeworm recorded (1.54%).

Impacts of gender, age and rearing system on the prevalence were recorded. It was found that the prevalence of helminths species eggs infection in male camelswas10.4% as compared to she-camels (34.3%). Furthermore, camels less than three years had the lowest infection rate (9.09%) as compared to those over 3 years old (13.27%).

Higher prevalence was observed in camels reared in free range system (20.37%) as compared to those feed on concentrate ration (9.57%). Also, there were strong significant seasonal trends in the prevalence of the recovered helminths. The peak prevalence rate of helminthiasis was observed during winter (17.17%) followed by summer (15.83%), spring (10%), and the lowest rate was recorded during autumn.

Currently, the most hematological and biochemical profiles of infected camels was decline significantly as the parasite intensity increased.

The present results displayed that twenty-four animals (21.82%) were found to be infected with one or more species of gastrointestinal helminths by postmortem examinations. *Moniezia expansa,* and *Stilesia globipunctata*, emerged as the most prevalent species (29.2%), with *Avitellina centripunctata* also being common (20.83%).Whereas, *Moniezia benedeni,* was present at low infection rates (12.5%). Furthermore, the only recorded trematode worm was *Paramphistom* spp. (1.82%).

Gender variations revealed a significant (P≤0.05) differences among examined camels. It was found that the higher rate of infection was recorded in female animals (54.6%) as compared to their male counterparts (18.2%). Conversely, the host age was found to be an insignificant factor for the prevalence of GIT parasites with helminths being detected frequently in age categories of <3 years than the older age category. Similarly, seasonal dynamics had no significant differences with the highest peak in winter season (33.3%). The prevalence in regard to the type of rearings ystem, it was found that the higher infection rate value was recorded in free grazing camels as compared to those receiving a concentrate feeding type. However, this difference was found to be non-significant.

Additionally, out of 110 camels slaughtered, 11 (10%) were found harboring hydatid cysts. Slight higher rate of HCs was observed in male (10.1%) in comparison with female counterparts (9.1%). The current survey revealed that infection varied according to the camel's age, with the highest prevalence of infection in older animals of age 3 years and over (12.3%), while animals with mostly1-2years have less infection rate (6.7%). Furthermore, the infection was found to prevail throughout the year, with the highest prevalence was recorded in winter (45.5%), while the lowest rate was encountered in spring (9.1%). The lungs were the most frequently infected organs (72.7%), with liver cysts

occurring at a significantly lower rate (27.3%). The fertility rate of examined hydatid cysts was observed to be 54.3%, while 37.1% and 8.6% of the cysts were sterile and calcified, respectively.

In regard to biochemical analysis of HCF from camel and cattle, we noticed that the mean value of total protein, glucose, urea, cholesterol, magnesium, potassium, copper and creatinine was higher in HCF from camels than cattle, while the mean value of calcium, triglyceride, and sodium were found lower in the camel HCF as compared to cattle HCF.

Blast and phylogenetic analysis on sequenced genes showed the presence of *E. intermedius*, originally the pig genotype (G7) in the samples for the first time in Egypt. Sequences relevant to *cox1* and *nad1* genes were deposited in the GenBank with accession numbers (MW173484 & MW173485) and (MW183239 &MW183239), respectively.