

STUDY ON PARASITES FROM FARM ANIMALS IN KUWAIT

By

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Abstract

No doubt, farm animals are essential as a source of milk, protein, and leather and wool...etc. But, they are always exposed to ecto- and endo-parasites, which cause diseases conditions that may end in death.

This study evaluated farm animal parasitosis. Thus, different animal farms were visited to collect fecal samples and data to determine the infection rates with parasites and the relationship between animal management and parasitism in Kuwait. Out of 86, 17, 20, 96 & 52 cattle, sheep, goats, horses and camels examined, 5.5, 17.5, 10, 9.3 and 2.5 % respectively were infected with different parasites.

These parasites were Ascarids in cattle and horses, Strongylids in cattle, horses and camels, and Eimeriids in cattle and small ruminants. *Eimeria* spp. were the most prevalent parasite particularly in small ruminants. The relationship between *Eimeria* infection and management in small ruminant farms was discussed.

Key words: Kuwait, Endo-parasites, Farm Animals, Economic loss.

Introduction

Parasitism is an animal health problem worldwide, under improper management and poor hygiene causing economic losses in world-wide. Even in subclinical infections, parasites have a negative impact, which may be continued unnoticed leading to the reduction of animal production. Charlier *et al.* (2012) in Belgium estimated the cost per year per cow due to gastrointestinal nematodes was about £ 46. On the other hand, the economic consequences of farm animals diarrhea are serious (Mawatari *et al.*, 2014)

In Kuwait, the country that has theatrically unpleasant climate, particularly in hot season, for thriving of parasites, a few studies have been conducted on parasitism in farm animals (Abdul-Salam and Farah, 1988), and little is known about the prevalence of parasitosis in farm animals.

The purpose of this study was to determine the prevalence of parasitic infections in farm animals under the animal management systems prevailing in Kuwait.

Materials and Methods

Weekly visits were paid to different animal farms of cattle, small ruminants, camels and horses for collection of fecal samples from different animal age groups randomly, regardless the occurrence of clinical problems. A questionnaire was completed for each farm to report information about herd size and management together with individual animal data (sex, age and health status). The samples were placed in clean covered labeled containers, with data and sent to the laboratory in ice box.

The fecal samples were categorized according to the consistency diarrheic manifestation as soft and watery (Soulsby, 1982).

The stool samples were examined fresh by the direct wet smear and by concentration-sedimentation method. Smears were stained Mallory and Iron haematoxylin for coccidiosis and intestinal parasites and by Modified Zeihl-Nelsen stain for cryptosporidiosis (El-Naggar *et al.*, 2006).

Results

The results are shown in table (1).

Table 1: Stool examination by direct smears and concentration flotation method

| Animal | No. examined | No. infected | Parasite |
|--------|--------------|--------------|--|
| Cattle | 86 | 4(5.5%) | <i>Toxocara vitulorum</i> ; <i>Strongyloides poillous</i> <i>Eimeria</i> (two species) |
| Sheep | 17 | 3 (17.5%) | <i>Eimeria</i> (three species) |
| Goats | 20 | 2 (10%) | <i>Eimeria</i> (three species) |
| Horses | 96 | 4 (9.3%) | <i>Parascaris equorum</i> , <i>Strongylus vulgaris</i> |
| Camels | 52 | 1 (2.5%) | <i>Strongylus</i> sp. |

Discussion

In the present study, the gastrointestinal parasites encountered were *Toxocara vitulorum* and *Strongyloides poillous* in cattle represented (5.5%), *Eimeria* spp. sheep and goats (17.5%), *Parascaris equorum* and *Strongylus vulgaris* in horses (9.3%) and *Strongylus* sp. in camels (2.5%).

Eimeria vulgaris were the commonest prevalent infection in sheep, from which three species were recorded, namely *E. ovinoidalis*, *E. bakuensis* and *E. crandallis*; but in goats, *E. christenseni*, *E. hirci* and *E. arloingi* were found. Also, two *Eimeria*; *E. bukidnonensis* and *E. subspherica* were recorded in cattle. Besides, double and/or triple infections with 2 or 3 of *Eimeria* spp were common. Toula and Ramadan (1998) in Saudi Arabia reported five *Eimeria* species from the domestic rabbits (*Oryctolagus cuniculus domesticus*), according to the prevalence, they were: *Eimeria perfarans* (65%), *E. magna* (45%), *E. stiedae* (25%), *E. exigua* (20%) and *E. piriformis* (10%). 90% of the examined rabbits were positive and mixed infection with two or three *Eimeria* species. Al-Natour *et al.* (2002 in Jordan reported mixed *Eimeria* species in broiler chicks.

In the present study, Ascarids were reported from cattle (*Toxocara vitullorum*) and horse (*Parascaris equorum*). Strongyle eggs were found in the fecal samples of cattle, horses and camels.

Infected small ruminants were recorded in ages up to one year; however, those showed diarrhea were less than 6 month. In cattle, horses and camels, the age groups were

above 6 months were infected but without any signs of diarrhea.

In cattle farms, calves are separated from dams and hand fed; in contrast, newborns of small ruminants, horses and camels are left with their dams. All animal species were kept in farms under intensive system. The floor was soil and the bed was sandy, except for horse stables where a bed of sawdust was used.

This study showed that *Eimeria* spp was more frequent than helminthes in livestock in Kuwait, particularly in small ruminants. This agreed with the results of Lloyd and Soulsby, (1978) in USA and Gebeyehu *et al.* (2013) in Korea. Also, Kanyari (1993) reported that small ruminants had higher infection rate with *Eimeria* spp. than helminthes and attributed that to the ability of the eimerian oocysts to survive in adverse environmental conditions as compared to helminthes' eggs.

Eimeria infection was recorded in all age groups of small ruminants, but diarrhea was observed in animals less than 6 months. Reporting higher infection rate and clinical signs in young animals is a common epidemiological feature of *Eimeria* infection. Most of parasitological surveys and this study have showed that small ruminants have mixed infection with different *Eimeria* spp. Kanyari (1993) reported ten and eight species of *Eimeria* in sheep and goats respectively; and Munyua and Ngotho (1990) found eight species in cattle. While in this study, only three species in each sheep and goats and two in cattle were recorded. Prob-

ably, because of the smaller numbers of the samples examined.

Usually, coccidiosis is associated not only with young ages but also with the most pathogenic species of *Eimeria* e.g. *E. ovinoivalis* in sheep and *E. ninakohlyakimovae* in goats respectively (Norton, 1986). In the present study, both species were recorded in diarrheic animals. Also, Bould *et al.* (2009) stated that coccidiosis was a major intestinal parasitic disease associated with severe economic losses and welfare issues in domestic animals particularly poultry. Besides, Alyousif *et al.* (2008) in Saudi Arabia described *Eimeria livialis* new species from the intestine of the domestic pigeon with severe diarrhea.

On the other hand, the housing system and non-cemented floor may lead to the development of higher level of infection with *Eimeria* spp. (Khan *et al.*, 2011). The same circumstances were observed in this study and may lead to losses among small ruminants.

The results of this study are indicative of the importance of coccidiosis in small ruminants with the possibility of causing losses. Nevertheless, a large-scale study with more samples examined is needed to throw the light on the epidemiology of this disease in small ruminants in Kuwait.

Generally speaking, the coccidiosis is a widespread and economically significant disease of livestock caused by protozoan parasites of the genus *Eimeria*. This disease is worldwide in occurrence and costs the animal agricultural industry many millions of dollars to control. In recent years, the modern tools of molecular biology, biochemistry, cell biology and immunology have been used to expand greatly our knowledge of these parasites and the disease they cause (Chapman *et al.*, 2013).

Conclusion

The intestine plays an important role in the digestion and absorption of the ingested food and elimination of undigested food, microbes, and microbial products. Generally, the *Eimeria* spp. is a group of the highest

successful intracellular protozoan parasites that develop within the enterocytes. So, periodical examination of farm as well as domestic animals and early treatment of infected ones is a must.

Control of coccidiosis is dominated by the prophylactic chemotherapy however, drug resistance is a complicated problem. The development of a specific recombinant vaccine is a must.

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