

## INCIDENCE OF GASTRO-INTESTINAL PARASITES IN KEDAH-KELANTAN CALVES

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**SUMMARY:** Twenty-five Kedah-Kelantan calves were monitored for one year from birth for gastrointestinal parasites. The calves were with the dams for the whole duration of the study and grazed on improved legume-based pasture. All calves were given an oral coccidiostat regularly for the first three months. Faecal examination thrice a month showed that the most common parasite was *Eimeria* which was present in 100 percent of the calves especially during the first six months inspite of regular coccidiostat therapy. Three species were identified; *E. bovis* and *E. zuernii* in 88 percent of the calves and *E. ellipsoidalis* in only two calves in the group. The next most predominant parasite was the nematode *Strongyloides papillosus* which was found in all the calves during the first three months. Strongyle eggs were found in 92 percent of the calves from three months onwards. Faecal culture showed that *Haemonchus placei* was the only strongyle present. Tapeworm (*Moniezia*) was noted in less than half the calves whereas *Toxocara* was found in only two calves in the group within the first two months. All the calves appeared to have a subclinical level of infection.

**Key words:** incidence, gastro-intestinal parasites, Kedah-Kelantan calves

### INTRODUCTION

There are about half a million heads of Kedah-Kelantan (KK) cattle in the country. Most of these belong to smallholders. Production parameters are low in these animals, but with improved management and nutrition liveweight gains can be increased. Endoparasitism causes insidious losses of production through reduced feed intake and decreased efficiency of feed utilization. Helminthiasis of the gastrointestinal tract appeared to be the most common parasitic condition among food animals in this country (Fadzil, 1977). Shanta (1982) listed the helminths prevalent in cattle in West Malaysia. Their occurrence in calves specifically where susceptibility is greatest is, however, not documented. This paper reports the incidence of gastrointestinal parasites in KK calves from birth to one year of age in the Beef Unit of Universiti Pertanian Malaysia.

### MATERIALS AND METHODS

#### *Animals*

This study was conducted at the Beef Unit of Universiti Pertanian Malaysia with 25 newborn KK calves. The calves were selected by systematic sampling, which involved every third calf born in the unit, until a total of 25 was obtained. These calves were esta-

blished as being non-infected when they were newborn based on the absence of gastrointestinal parasites in the initial faecal examination which was performed within three to five days after birth. These calves grazed with their dams on improved legume based pasture. The dam-calf group was moved to a fresh paddock when the herbage in the existing paddock was depleted after about one to two weeks.

#### *Experimental design*

All calves were given an oral coccidiostat (Sulfatriad; May & Baker) at a dose rate of 23 mg/kg body weight every ten days for the first three months and whenever necessary thereafter as indicated by high oocyst counts. The coccidiostat was administered to control coccidiosis which in the past had proved to be a problem in calves below three months. The dams were not treated with coccidiostat nor anthelmintics. Faecal samples from the calves were collected thrice a month for the first six months and monthly thereafter. The calves were observed for clinical signs of endoparasitism through regular physical examination.

#### *Laboratory examination*

Faecal samples were examined using the Modified McMaster's Technique (Charleston and Collins, 1977) for quantitative examination of helminths eggs and coccidia oocysts. Faecal samples with strongyle egg counts of 300 eggs per gram or more were cultured (Wells, 1977) using sterile faeces to ascertain the species of strongyle present.

## RESULTS

At any one time if a calf has evidence of parasites in its faeces, then it is considered to be affected. This is used in the numerator for the calculation of percent incidence, as in Table 1 which shows the incidence of gastrointestinal parasites in the calves based on faecal examination over one year. Table 2 shows the various parasites present in calves of different age groups from birth to one year of age. Four species of helminths, namely,

TABLE 1  
Incidence of gastro-intestinal tract parasites in calves  
from birth to one year

Parasite species	No. of calves affected	% Incidence
<i>Eimeria</i> spp.	25	100
<i>E. bovis</i>	22	88
<i>E. zuernii</i>	22	88
<i>E. ellipsoidalis</i>	2	8
<i>S. papillosus</i>	25	100
Strongyle spp.	23	92
<i>Moniezia</i> sp.	11	44
<i>T. vitulorum</i>	2	8

TABLE 2  
Parasite species found in various age groups in  
calves below one year of age

Age (days)	S	S.p	E.b	E.z	E.e	M	T.v
< 10	—	+	+	—	—	—	—
> 10—30	—	+	+	+	—	—	+
> 30—60	+	+	+	+	+	+	+
> 60—90	+	+	+	+	+	—	—
> 90—120	—	+	+	+	—	—	—
> 120—150	+	+	+	+	—	+	—
> 150—180	+	—	—	—	—	+	—
> 180—240	+	—	—	—	—	+	—
> 240—360	+	—	—	—	—	—	—

- S = Strongyles  
 S.p. = *Strongyloides papillosus*  
 E.b. = *Eimeria bovis*  
 E.z = *Eimeria zuernii*  
 E.e = *Eimeria ellipsoidalis*  
 M = *Moniezia* sp.  
 T.v = *Toxocara vitulorum*

*Strongyloides papillosus*, *Toxocara vitulorum*, *Moniezia* spp and strongyles, and one protozoan genus, *Eimeria*, were encountered. The most common parasite in the calves was *Eimeria* which was present in 100 percent of the calves in the trial inspite of early regular coccidiostat prophylaxis. Three species were identified; *E. bovis* and *E. zuernii* was seen in 88 percent of the calves and *E. ellipsoidalis* in 8 percent of the calves. High oocyst counts of 1,000 to 10,000 egg were noted during the first two months, after which oocyst counts dropped to 500 egg or less.

*Strongyloides papillosus* was seen in all the calves less than three months of age. Egg counts in individual calves ranged from 57 to 20,000 egg during this period. Egg counts diminished to zero and remained so till one year of age except for one calf which had 6,000 egg at about seven months of age.

Strongyle eggs were noted in calves from the age of 40 days reaching a maximum mean count around 100 to 120 days and then gradually decreased by day 190 to 360. Egg counts were generally low, and ranged between 138 to 7,000 egg with 92 percent of the calves infected. Faecal culture revealed that *Haemonchus placei* was the only strongyle present.

*Moniezia* sp. infection was evident in 44 percent of the calves between the ages of 130 to 200 days. The mean egg counts reached a maximum of 550 egg in five 160-day-old calves. Individual counts ranged between 667 and 4,000 egg.

*Toxocara vitulorum* eggs were found in only two calves. Low egg counts of 166 to 3,500 egg was seen in calves aged between 20 to 60 days, with zero egg counts thereafter.

Physical examination of the calves throughout the one year period revealed that the calves were physically normal with no clinical signs of endoparasitism such as unthriftiness and diarrhoea.

## DISCUSSION

In this country, helminthiasis constituted 73 percent of the total number treated for parasitism in cattle and buffaloes (Fadzil, 1977). Although field records indicated that the most common treatment administered was against helminthiasis, worm infestation continue to be prevalent (Anwar, 1977). Thus the collection of information on the incidence and parasitic profile in cattle particularly calves, should be given research priority as it would provide an economic perspective to the recommendations on control as well as to refine control measures.

*Eimeria* sp. being the most common protozoan species was predominantly encountered in younger animals. *E. bovis* and *E. zuernii* being the most pathogenic species of bovine coccidia could cause diarrhoea, emaciation, dehydration and eventually death in young calves. However, a high degree of immunity to reinfection takes place as calves grow older (Levine, 1973). In this study, this immunity was observed as the oocyst counts dropped drastically after the first two months. In spite of treatment with sulfatriad every ten days for the first three months, there was 100 percent infection rate in the calves. This could be due to the fact that the prepatent period for *Eimeria* is short (seven to ten days). Thus oocysts picked up from pasture a few days after treatment were still able to generate an infection in the calves thus releasing oocysts again within the next ten days.

*S. papillosus* infection was seen in all the calves and was particularly evident in calves less than three months of age. This could be attributed to the mode of infection of this parasite which was via the colostrum, as well as the short prepatent period which was about ten days in cattle. Egg counts diminished after three months of age in the calves as a result of the development of immunity against the parasite. Roberts *et al* (1952) reported that resistance to *S. papillosus* usually developed only by five months of age. This explained why egg counts were high during the first three months. Clinical signs and serious infections of the disease were unusual especially if calves were in the field with their dams under extensive grazing management.

*Haemonchus placei* was the only strongyle encountered and with 92 percent of the calves infected, it was an important parasite to control when trying to improve productivity in cattle. Copeman (1982) reported that *H. placei* was one of the most important, common and pathogenic species of parasite in cattle because of its short prepatent period, fecundity and blood sucking activity of the larvae and adult. Roberts *et al.* (1952) noted that calves were most susceptible to infection when they started grazing and then later became immune as shown by lower egg counts.

Soulsby (1976) reported that calves below six months were commonly infected with *Moniezia*, and light or substantial burdens were of little pathogenic importance. Hence, it did not seem to pose a threat to livestock health and productivity especially when good nutrition and health care were provided. In contrast, coccidiosis and haemonchosis, which had the ability to build up potent infections in a short period of time, could cause devastating losses in production.

*T. vitulorum* infection had a low incidence in the herd due to the extensive grazing which helped to lower pasture contamination with the infective ova. Only two calves were infected and no clinical signs were noted. The calves developed a strong resistance to the parasite fairly quickly as no eggs were seen after two months of age. The mode of infection of *Toxocara* is via the colostrum, as well as prenatal which accounted for the infection being obvious in the young calves as early as 20 days of age. It was fortunate

that very few calves had *T. vitulorum* as heavy infestations with adult worms could cause digestive disturbances, poor growth and lowered resistance to other diseases (Blood and Henderson, 1966).

The present study showed that subclinical infections existed in this herd based mainly on observation of the physical condition of the animals and to a lesser degree on the faecal examination. The extensive system of managing these animals most probably contributed to the subclinical situation. This situation, however, did not mean that the productivity of the animals was unaffected since numerous studies have shown that subclinical infections hindered production.

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## RINGKASAN

### INSIDEN PARASIT GASTROINTESTIN PADA ANAK-ANAK LEMBU KEDAH-KELANTAN.

Dua puluh lima anak lembu Kedah-Kelantan telah dimonitor selama setahun sejak lahir untuk parasit gastrosus. Anak lembu bersama ibu pada keseluruhan jangkamasa pengajian dan meragut pastura bermutu. Kesemua anak lembu sering diberi koksidiostat pada tiga bulan yang pertama. Pemeriksaan tinja yang dilakukan tiga kali sebulan menunjukkan parasit yang paling biasa terdapat ialah *Eimeria*. Parasit ini terdapat pada 100 peratus anak lembu dibawah enam bulan walaupun diberi kawalan koksidiostat. Tiga spesis telah dikenalpastikan; iaitu *Eimeria bovis*, *E. zuernii* dalam 88 peratus daripada anak lembu dan *E. ellipsoidalis* dalam hanya dua anak lembu dalam kumpulan itu. Parasit yang kedua banyaknya ialah nematod *Strongyloides papillosus* yang didapati dalam semua anak-anak lembu semasa tiga bulan pertama. Telur-telur strongyle terdapat pada 92 peratus daripada anak-anak lembu yang berumur tiga bulan keatas. Kultura tinja menunjukkan hanya terdapat *Haemonchus placei* sahaja. Cacing pita (*Moniezia*) terdapat pada sebahagian daripada anak-anak lembu sementara *Toxocara vitulorum* didapati hanya pada dua anak lembu dalam kumpulan ini dalam tempoh dua bulan pertama. Kesemua anak-anak lembu menunjukkan infeksi ditahap subklinikal.