



Species of *Eimeria* of Adult Cattle in Guatemala

In the course of a survey to determine the prevalence of the gastrointestinal parasites of adult slaughter cattle in Guatemala (Balconi, 1963, submitted for publication, Vet. Med.) by the examination of fecal samples, the incidence of bovine coccidia was determined in 100 randomly chosen samples of a total of 740 examined.

Reports on the prevalence of bovine coccidia in cattle in Central America have been made from Costa Rica only (Ruiz, 1959, Rev. Biol. Trop. 7: 221-224; Ruiz and Ortiz, 1961, Rev. Biol. Trop. 9: 215-218), the present being the first report from Guatemala. The identification of the various species of coccidia was made according to Christensen (1941, J. Parasit. 27: 203-220) and to Torres and Ramos (1939, Arq. Inst. Pesquisas Agronom. 2: 79-96).

Ten species of bovine coccidia previously reported from the United States, including *Eimeria brasiliensis* (Boughton, 1945, N. Am. Vet. 26: 147-153; Davis and Bowman, 1952, Proc. 55th U. S. Livestock San. As.; Hasche and Todd, 1959, J. Parasit. 45: 202) first reported from Brazil by Torres and Ramos (1939, Arq. Inst. Pesquisas Agronom. 2: 79-96), were found in Guatemala cattle. (Table I).

The age of the animals sampled varied from 3 to 10 years; they came from different rainfall zones in Guatemala and were mostly native cattle.

The nature of the mixed infections by helminths and coccidia will be published elsewhere. However, the distribution of the 740 samples according to the number of oocysts/5 g of feces is given in Table II.

As shown in Table II, where all 740 samples were quantitatively examined for coccidian

TABLE II. Distribution of samples (%) according to numbers of oocysts.

No. samples	Oocysts/5 g of feces					
	0	1-100	101-500	501-1,000	1,001-10,000	10,000-20,000
740	29.1	53.3	5.4	3.9	7.8	0.5

oocysts in general, 29.1% were negative for *Eimeria* species. In Table III where only the 100 samples used for species identification are included, 31% of the samples were negative.

In Table III the percentages of coccidian infections by one, two, three, four, and six species are given; infections by five species simultaneously were not found.

The study of parasitic infections in livestock, including those by coccidia, should be as detailed as possible, not only because of the difference in pathogenicity of the various parasites, but also because of the selectivity of the drugs being developed at present.

Comparison of the data reported in this note with those obtained by others in various parts of the world is not made because ecological factors vary so widely between the regions surveyed, and the animals are not comparable in age. Careful field studies are under way to determine how the nature of parasitic infections changes in the same area over a given period of time, knowing the changes in management and therapy over the same period.

The results of the present survey point out the high prevalence of bovine coccidia in Guatemala and should encourage more investigation in order to determine the economic importance of coccidiosis in Guatemalan livestock.—I. RAUL BALCONI, *Animal Nutrition Section, Division of Agricultural and Food Chemistry, Institute of Nutrition of Central America and Panama (INCAP), Guatemala, C. A. INCAP Publication I-295.*

TABLE I. Incidence of bovine coccidia in adult slaughter cattle in Guatemala.¹

Species	Positive samples (%)
<i>Eimeria auburnensis</i>	43.0
<i>Eimeria ellipsoidal</i>	47.0
<i>Eimeria alabamensis</i>	43.0
<i>Eimeria bovis</i>	45.0
<i>Eimeria canadensis</i>	39.0
<i>Eimeria zurnii</i>	25.0
<i>Eimeria cylindrica</i>	19.0
<i>Eimeria subspherica</i>	12.0
<i>Eimeria bukidnonensis</i>	6.0
<i>Eimeria brasiliensis</i>	3.0

¹ 100 randomly chosen samples.

TABLE III. Number of species represented by coccidian infections in adult cattle in Guatemala.

No. samples	Per cent					
	Negative	1 sp.	2 sp.	3 sp.	4 sp.	6 sp.
100	31.0	31.0	23.0	10.0	4.0	1.0