THE PREVALENCE OF POULTRY COCCIDIOSIS AND THE ANTICOCCIDIALS IN USE IN SOUTHERN NIGERIA

M. O. ABATAN, C. G. NDEMILI, and A. D. MOGBOJURI
DEPARTMENT OF VETERINARY PHYSIOLOGY AND PHARMACOLOGY,
UNIVERSITY OF IBADAN, IBADAN
(Received 11th May, 1989. Accepted 10 Oct., 1989.)

ABSTRACT

Forty brooder houses were sampled from four States in the southern part of Nigeria, namely: Oyo, Lagos, Imo and Anambra States, to identify the species of coccidia. Five species of Eimeria were isolated including *Eimeria tenella; E. necatrix; E. maxima and E. mivati/E. mitis.* **Using the McMaster count, the number of oocyst occuring in each brooder house was calculted with the species of Eimeria oocyst, confirmed by experimentally infecting clean chicks and determining occyst size using the ocular micrometer. Frequent outbreaks of coccidiosis in these brooder houses were obviously prevented by the practise of administering anticoccidials daily until the birds were mature as can be observed with the use of common drugs as coccidiovit, amprolium, deccox, furazol, naccox and coxdin.**

Key words:- Brooder house, Coccidia, Eimeria, Poultry anticoccidials.

INTRODUCTION

Coccidiosis is a protozoan disease of all domestic mammals and poultry. It is of minor economic importance in adult animals but can build up to serious proportions in the young of all species (Edgar and Siebold 1964).

Coccidia are assumed to be prevailent among Nigerian broiler flocks and are an acknowledged threat to optimum economic returns from livestock production (Majaro, 1980).

There are nine major species of Eimeria which attack poultry. Listed in the order in which they parasitize the intestinal tract of poultry, starting from the duodenum are: *Eimeria acervulina, E. hagani, E. mivati, E. praecox, E. maxima, E. necatrix, E. brunetti, E. mitis and E. tenella* (Soulsby, 1968; Long and Reid, 1982).

Although coccidiosis continues to be one of the most frequently diagnosed diseases in poultry establishments, no constant surveys are reported on the incidence and anticoccidial drug resistance spectra of field strains of Eimeria species in anticoccidial drug screeining and evaluation programmes.

This study was therefore directed at determing the types of Eimeria speices, their prevalence and the types of anticoccidials in use in controlling the outbreaks.

MATERIALS AND METHODS

Poultry droppings

Faecal material was collected from ten poultry farms each, from four States in the south of Nigeria, namely, Oyo, Lagos, Imo and Anambra States. On each of these farms, poultry droppings were collected from brooder houses. The collection was randomly done in five locations within each brooder house. The collections from a brooder house were then pooled together for analysis.

Experimental chicken

Broiler chicks of three weeks old were used for the confirmation of the species of Eimeria isolated from the faecal material from the brooder houses. Each chick was administered with 3 ml suspension containing sporulated and unsporulated oocyst prepared from the poultry droppings using an oral canula (Jeffers 1974).

Diagnosis of coccidial infection

The experimental chicks that had been infected with oocyst were sacrificed on the 8th day. The infected birds were examined grossly and microscopically to identify species of coccidia. Species identification was based upon the appearance of characteristic lesions an d the presence of characteristic schizonts and gametocytes in fresh smears of the intestinal mucosa (Soulsby, 1968; Long and Reid, 1982).

Enumeration of oocyst

The number of oocyst per gramme of faecal material was determined by weighing 2 mg of faeces into 60 ml of concentrated sodium chloride solution. This was left until sufficiently soft and then stirred before sampling to a McMaster Chamber using a pasteur pipette. After allowing the oocyst to rise in the chamber, the total number under the rule area (0.15 ml) was

counted (Thienpont, Rochette and Vanparijis 1979).

Contents and scrappings from the parts of th gastro-intestinal tract of the experimental chicks showing typical gross lesions were collected separately into breakers containing 2.5% potassium dichromate and filtered through a 100 per inch sieve to obtain oocyst suspension. The width and length of thirty oocyst observed were measured using an ocular micrometer after filling a haemocytometer with the oocyst suspension. Measurements were in millimicrons (Long and Reid 1982). The values of the length of each oocyst over the width gives the oocyst index.

The schizonts and gamatocytes were observed after making smears on slides from scrapings made as described above and observed under the high magnification of microscope.

RESULTS

The type of oocyst isolated and the lesions from experimentally infected chicks show that most of the brooder houses from the four States haboured mixed infections. The mixed infection include species of *Eimeria necatrix, E. tenella,* and *E. mivati* for Oyo and Lagos States while the species isolated from Imo and Anambra States include all those of Oyo and Lagos States and in some brooder houses *E. maxima* oocyst was also isolated (Table 1, 2, 3 and 4).

Investigations also show that the brooder houses used mainly sulfonamides and occasionally nitrofurants in the feed or water of the chicks. All of the farms except a few also used the coccidiostats throughout the life of the chicks.

DISCUSSION

A presumptive diagnosis of the species of coccidia producing lesions in chicks cna usually be made in a few minutes after inspection of the lesions and microscopic examination of smears from the lesions. If anticoccidials are to be used in treatment, diagnosis must be prompt. An idea of the common coccidia present in an area may assist in initiating immediate treatment before confirmatory diagnosis with the cumbersome laboratory procedure.

In this study, we have tried to differentiate between the Eimeria speicies affecting the anterior portions of the intestine since the gross lesions produced by the other species are easy to interprete. Differentiation between such species as Eimeria acervulina, E. mivati and E. mitis sometimes requires special studies. Confirmation requires detailed laboratory work which include minimum sporulation time, the prepatent period, and in some cases cross immunity experiments (Long and Reid 1982). This will form part of the next report.

In species like E. praeco where no gross lesions are produced, as this parasite develop in the epithelium of the upper 1/3 of the digestive tract (Soulsby 1978) it has been difficult to include it among the species identified here.

Although size of the oocyst may be helpful in determination of the species, there are certain limitations in its use (Jones 1932). In fact, it is doubtful if species other than E. maxima, (E. mitis/*E. mivati*) can be differentiated by this character alone (Edgar and Siebold 1964). In this study as many as thirty oocyst were measured with the ocular micrometer before grouping them into the speicies they belonged to. This was corroborated with the use of oocyst index and the lesional studies.

The use of anticoccidials continuously in the feed or water of the birds in the brooder houses may account for the reduced incidence of coccidiosis outbreak (Long 1970, Brander and Pugh 1980; Ajayi and Anthony 1983). However, those farms in which outbreaks occured inspite of the use of anticoccdials may have to be sampled for anticoccidial drug resistance since apart from cases of under dosage, resistant coccidia could develop because of the practise of using anticoccidials.

TABLE 1. NAMES OF BROODER HOUSES SAMPLED IN LAGOS STATE, NUMBER OF OOCYSTS ISOLATED, TYPE OF COCCIDIOSTAT IN USE AND EIMERIA SPECIES IDENTIFIED

NAME OF BROODER HOUSE	Oocyst no in 10^3/g faeces	Eimeria species identified				Coccidiostat used			
		Mixed	*E. ten.*	*E. miv.*	*E. nec.*	Type	Freq. of Admn.	Mode	Any out break
1. Olorunkemi Poultry Farms, Lagos	180	YES	+	+	+		-	-	YES
2. Lagos State Poly. Farms, Ikordu	66	YES	+	+	+	Coccidiovit 20%	DAILY	water	NONE
3. Tunde and Sons Ent., Lagos	31	YES	+	+	+	Amprolium	DAILY	feed	NONE
4. Kaka Farms Settlement, Ikorodu	36	YES	+	+	+	Deccox	DAILY	water	NONE
5. Aajayi and Sons Farms, Bariga	39	YES	+	+	+	Furazol	DAILY	feed	NONE
6. Tobatle Farms, Agege	64	YES	+	+	+		-		NONE
7. Amoye Farm, Agege	45	YES	+	+	+	Naccox	DAILY	feed	NONE
8. Mitchel Farms, Agege	43	YES	+	+	+	Deccos	DAILY	feed	NONE
9. Adewale Enterprises. Pedro	31	YES	+	+	+	Coccisol 20%	DAILY	feed	NONE
10. Bimpe and Co. Lagos	56	YES	+	+	+	Amproliium	DAILY	feed	NONE

TABLE 2. NAMES OF BROODER HOUSES SAMPLED IN OYO STATE, NUMBER OF OOCYSTS ISOLATED, TYPE OF COCCIDIOSTAT IN USE AND EIMERIA SPECIES IDENTIFIED

NAME OF BROODER HOUSE	Oocyst no in 10^3/g faeces	Eimeria species identified				Coccidiostat used			
		Mixed	*E. ten.*	*E. miv.*	*E. nec.*	Type	Freq. of Admn.	Mode	Any out-break
1. Ogun-Oshun River Basin, Ibadan	25	YES				Decox	DAILY	FEED	NONE
2. Zartech Farm, Ibadan	2	NO	-	-	+	Coccisol	DAILY	FEED	NONE
3. U.I. Teaching/ Research Farm	5	YES	-	+	+	Amprolium	DAILY	FEED	-
4. Vabo Farms, Moniya	12	YES	+	-	+	Furapol	Occisional	WATER	YES
5. Farombi Farms, M oniya	18	YES	+	+	+	Furaxol	DAILY	FEED	YES
6. F & F Farms, Moniya	16	YES	+	+	+	Amprosol 3 DAYS/ WEEK		WATER	NONE
7. Segi & Seyi Farm, Gbogan	18	YES	+	-	-	Amprolium	DAILY	FEED	NONE
8. Olorunfemi Poultry Farm, Erin Ijesha	24	YES	+	+	+	Naccox	Occasional	WATER	NONE
9. Abiran Farm, Ile-Ife	10	YES	+	-	+	Coxdin	?	WATER	NONE
10. Pacific Farms, Ede	12	YES	+		+	Amprolium	Occasional	WATER	YES

TABLE 3. NAMES OF BROODER HOUSES SAMPLED IN IMO STATE, NUMBER OF OOCYSTS ISOLATED, TYPE OF COCCIDIOSTAT IN USE AND EIMERIA SPECIES IDENTIFIED

NAME OF BROODER HOUSE	Oocyst no in 10^3/g faeces	Eimeria species identified					Coccidiostat used			Any outbreak
		Mixed	*E. ten.*	*E. nec.*	*E. miv.*	*E. max.*	Type	Freq. of Admn.	Mode	
1. Imo Modern Poult. Owerri	25	YES	+	+	-	+	Tridioxin + ESb3	6 days	Water	NONE
2. U.O.O. Farns Aba	30	YES	+	+	-	+	Deccox + Amprol	Daily	Feed	YES
3. A.D.C. Farms, Aba	30	YES	+	+	-	-	Coccisol	Daily	Feed	NONE
4. Amadi Poultrv Farm, Owerri	19	YES	+	+	-	+	Naccox + Coxsta	Daily	Feed	NONE
5. Patok Animal Farm, Mgbidi	30	YES	+	+	-	+	Furaprol	Daily	Feed	NONE
6. Nwosu Farms	30	YES	+	+	-	+	Furaprol Water	7 days		NONE
7. Ministry of Agric Farm,, Owerri	30	YES	+	+	+	-				NONE
8. Okumagbe Poultry Orlu	30	YES	+	+	-	+	Amprosol	Daily	Feed	NONE
							Furazol-lidone Water	7 days		
9. Epe Farms, Orlu	30	YES	-	+	-	-				YES
10. Azigbo Farms, Aba		YES	-	-	-	-	Amprolmix Water	Daily		NONE
							Avatec	Daily	Feed	

TABLE 4: NAMES OF BROODER HOUSES SAMPLED IN ANAMBRA STATE, NUMBER OF OOCYSTS ISOLATED, TYPE OF COCCIDIOSTAT IN USE AND EIMERIA SPECIES IDENTIFIED

NAME OF BROODER HOUSE	Oocyst no in 10^3/g faeces	Eimeria species identified					Coccidiostat used			Any outbreak
		Mixed	*E. ten.*	*E. nec.*	*E. miv.*	*E. max.*	Type	Freq. of Admn.	Mode	
1. Akunne's Farm Onitsha	30	YES	+	+	-	+	Furaprol	7 days	Water	NONE
2. Okoli's Farm Onitsha	36	YES	-	+	+	+	Amprol	7 days	Water	NONE
3. Univ. of Nig., Nsukka Farm	4	YES	+	+	-	-	Niciazin + Amprosol	Daily	Feed	NONE
4. Udokwu Farm, Umuoji	30	YES	+	+	-	+	Coccidiovit	7	Water	NONE
5. Idemili Enter. Poult. Nlepor	30	YES	-	+	+	+	Tridioxin	6	Water	NONE
6. Dr. Momoh's Farms Okija	20	YES	+	+	-	+	Furaprol	Daily	Feed	YES
7. Onwumelu Farm Umuoji	28	YES	+	+	-	+	Coccisol	Daily	Feed	NONE
8. Basino Farms, Umuoji	41	YES	+	+	-	+	Amprolium	7 days	Feed	NONE
9. Chukura Enter. Nnewi	37	YES	+	+	+	-	ESb3	6 days	Water	NONE
10. Anoma Farms Awka	51	YES	-	+	-	+	Cocide	Daily	Feed	NONE

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