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EFFECT OF EGG ADAPTED GAMETOCYTIC VACCINE (LOCAL ISOLATES) ON LESION SCORE IN COCCIDIOSIS IN POULTRY

Muhammad Mazhar Ayaz and Masood Akhtar
[1]Pathobiology Department, Faculty of Veterinary Sciences, BahauddinZakariya University, Multan, Pakistan.
email: mazharayaz@bzu.edu.pk

Abstract
An egg adapted gametocytes (Local isolates) *E. tenella,* vaccine(s) were used against coccidiosis in chickens. A total of two hundred day old chicks were utilized in this study. On day fifth of their age, they were divided into four groups, viz Group-I, group-II, Group-III and Group-IV having 50 chicks in each groups. These groups were distributed as; Group-I, Group-II, Group-III and Group-IV and were administered vaccine(s) for immunization orally viz; Vaccine I (gametocytes), to chicks of Group-I, Vaccine II (gametocytes inactivated) to Group-II, Vaccine III (gametocytes sonicated inactivated) to Group-IIII and Group-IV served as control given normal saline. On day 15th post-immunization, chicks were challenged with 60,000–70,000 sporulatedoocysts of mixed species of *Eimeria*. On day 21st post vaccination, birds were subjected to postmortem and their lesions score were recorded. A maximum of 46 (92%) birds having lesions in intestine and caeca of Group-IV were observed while a minimum of 17 (34%) birds having slight lesions in intestine and caeca were observed in Group-III. There was non-significant difference (P>0.05) in lesions score of Group-I, II and IV. Lesions scores in Group-III were significantly different (P>0.05) from Group-I, II and IV. It is concluded that on the basis of lesions score the egg-adapted vaccine saved the chicks against coccidiosis on challenge.

Keywords: Coccidiosis in poultry, Gametocytic vaccine, Immunization, Lesion score.

INTRODUCTION
Avian Coccidiosis is one of the major poultry diseases of economic importance worldwide. Estimated economic losses due to the disease are about US$ 300 million annually [Dalloul and Lillehoj 2006]. In countries like Pakistan where the farming is substandard, the disease becomes more serious and causes heavy economic losses; although the exact losses due to coccidiosis in Pakistan are not known due to the lack of statistical indices but these will be definite in million of rupees. Avian coccidiosis (Eimeria) has several species but *Eimeria (E) viz E. tenella*, *E.*

* Corresponding author

acervulina, E. necatrix, E. brunetti, E. mitis, E. hagani, E. praecox and *E. maxima* are considered to be the most important to the poultry industry from consideration of their ubiquity in broiler chicks, innate pathogenicity and immunological features [Schnitzler and Shirley 1999 and Soulsby 2006]. In Pakistan, there are several species of Eimeria, among them *E. tenella* and *E. maxima* are considered most pathogenic [Rehman 1971]. To evaluate the pathogenicity of avian coccidian after the experimental trials of gametocytic vaccine, in the intestines of the experimental birds lesion score is a valuable adjunct. Lesion score not only helps in the pinpointing of predilection site and specific pathogenic affinity (SPA) of the disease causing Eimeria. Moreover, it helps to evaluate the amount of harm caused by the coccidial parasites in the intestines of the chicks.

MATERIALS AND METHODS

An egg adapted gametocytes (Local isolates) *E. tenella,* vaccine(s) were used against coccidiosis in chickens. The vaccines were evaluated through lesion score. A total of two hundred day old chicks were utilized in this study. On day fifth of their age, they were divided into four groups, viz Group-I, Group-II, Group-III and Group-IV having 50 chicks in each group. The groups were administered vaccine(s) for immunization orally viz; Vaccine I (gametocytes), to chicks of Group-I, Vaccine II (gametocytes inactivated) to Group-II, Vaccine III (gametocytes sonicated inactivated) to Group-IIII and Group-IV served as control given normal saline. On day 15th post-immunization, chicks were challenged with 60,000–70,000 sporulatedoocysts of mixed species of *Eimeria*. On day 21st post vaccination birds were subjected to postmortem and their lesions score were recorded [Johnson and Reid 1970]. The lesion score Table was designed as; 0: no lesion, 1: moderate lesion, 2: slightly severe lesion (light haemorrhages), 3: severe signs (heamorrhagic lesions), 4: most severe lesion (ulcerative heamorrhagic lesions). The data obtained was analyzed statistically [Steel and Torrie 1982].

RESULTS AND DISCUSSION

On day 15th post- immunization two hundred chicks were challenged with 60,000–70,000 sporulatedoocysts of mixed species of *Eimeria*. On day 21st post vaccination birds were subjected to postmortem and their lesions score were recorded as mentioned above.

Table: The lesion score.

Groups	0	1	2	3	4	Total	% age
G-I (n=50)	6	15	15	14	-	44	88
G-II (n=50)	7	10	25	10	-	43	86
G-III (n=50)	2	15	-	-	-	17	34
G-IV (n=50)	4	10	30	6	-	46	92

Photograph: Hemorrhagic lesions distributed on the large intestine of the Chicken.

The above shown photograph illustrates hemorrhagic lesions distributed on the large intestine of a chicken. A maximum of 46 (92%) birds having lesions in intestine and caeca of Group-IV were observed while a minimum of 17 (34%) birds having slight or no lesions in intestine and caeca were observed in Group-III. Results of the challenge experiments against mixed species of genus *Eimeria*revealed a non-significant difference (P>0.05) in oocysts count between Group-I and Group-II while the difference of Group III was significant (P>0.05) with Groups I, Group II and Group IV. Chicks mortality in Group I was significantly higher (P>0.05) as compared to Group III and control Group IV but mortality difference was non-significantly different (P>0.05) between Group-I and Group-II. Results of the challenge experiments showed that the Group III administered vaccine-III resisted to heavy dose of infection. There was non-significant difference (P>0.05) in lesions score of Group I, Group II and Group IV. Lesions score in Group III was significantly different (P>0.05) from Group I, Group II and Group IV. Lesion scores were found to be directly proportional to the mortality and oocyst count per gram of droppings but inversely proportional to the percent protection and level of the immune responses. It was also observed that mild to moderate lesions produced despite of immunity conferred which reflect that the organism has multiplied but may not lead to fatality to cause the disease or mortality [Conway *et al*. 1990, Conway *et al*. 1993 and Conway *et al*. 1999].

CONCLUSION

It is concluded on the basis of lesions score that the egg-adapted vaccine of Group-III protected the chicks against coccidiosis in challenge.

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