Journal of Animal Research: v.6 n.4, p. 729-731. August 2016

DOI: 10.5958/2277-940X.2016.00090.5

VamDia Forte as Intestinal Function Modulator for Broilers

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Received: 03 February 2016 **Accepted:** 03 June, 2016

ABSTRACT

The present study was carried out to evaluate the effect of VamDia Forte as Intestinal function modulator for broilers. Two hundred and seventy day old Cob-400 broiler chicks having similar body weight (43g) were randomly allotted to three dietary treatments viz C, T_1 and T_2 containing VamDia Forte at 0, 0.5 kg/ton and 1 kg/ton respectively in the basal ration. No histological changes were seen at the age of 7^{th} day in all the groups. On 14^{th} day, in T_2 group, the villous length of the duodenum was increased in comparison to that of the control birds. Though the crypt number was increased their depth was decreased. In T_3 group, the duodenal villi showed maximum length and breadth with wide laminae propria having more capillaries. The crypts depth was decreased with fully developed cryptal epithelial cells. No significant difference was observed in respect of blood biochemical profile (albumen, globulin, blood urea and blood urea nitrogen). From the results it can be summarized that the VamDia Forte is most effective as intestinal gut modulator for broilers @ 1kg/ton.

Keywords: VamDia forte supplementation, intestinal function modulator, broiller chicks

For many decades, antibiotics have widely been used as growth promoter to enhance growth and the overall performance in poultry and livestock production. The use of antibiotics especially at subtherapeutic levels as a growth promoter has led to the development of bacterial resistance, cross resistance and multiple resistances (Gould, 2008). However, in 2006, the European Union and many countries including USA banned the use of antibiotics as growth promoters (Gould, 2008). As a result a lot of interests were focused on search for alternatives to antibiotic growth promoters. VamDia Forte is a synergistic combination of selective herbs like *Aegle marmelos, Holarrhena antidysentrica, Acacia catechu, Zinziber officinale* and brewer's yeast. Brewer's yeast qualifies both as probiotics and prebiotic for poultry. Therefore, the present study was carried out to evaluate the effect of VamDia Forte supplementation on gut morphology and blood profile of broilers.

METERIALS AND METHODS

In the present investigation, two hundred and seventy day-old Cobb-400 broiler chicks of similar body weight (43g) were procured from a single hatch. The chicks were randomly distributed into 3 groups viz. C, T_1 and T_2 containing 90 chicks in each, which were further divided into three replicates of 30 chicks in each. The standard basal diet was prepared for starter and finisher phase separately by using conventional feed ingredients as per BIS (1992) having 23.01 and 19.93 percent crude protein and 2837.94 and 2909.58 kcal ME/kg, respectively. The control group (C) were offered standard basal ration and chicks of T_1 and T_2 groups were offered same ration along with VamDia Forte supplementation @ 0.5 kg per ton and 1kg per ton respectively. The chicks were reared under electric brooders up to 4^{th} week and from the 4^{th} week to 6^{th} week they were reared on freshly laid deep litter in a well ventilated shed. The feeding trial was conducted for a period of 42 days. For histological study, intestinal tissues were collected from two birds per treatment on 7^{th} and 14^{th} days of age. Sections of 5-8 mm thickness were taken from each sample and fixed in 10% formaldehyde for 3-5 days. After the tissues were fixed properly, the representative pieces of tissues were cut in 2-3 mm thickness and washed

Table 1: Effect of VamDia forte on Different Haematobiochemical Parameters

Parameters	Control (C)	T_1	T_2	Significance
Total serum protein (g/dl)	5.75 ± 0.02	5.76 ± 0.003	5.75 ± 0.002	NS
Serum globulin (g/dl)	3.863 ± 0.002	3.865 ± 0.001	3.866 ± 0.001	NS
Urea (mg/dl)	2.33 ± 0.02	2.29 ± 0.05	2.18 ± 0.08	NS
Blood Urea Nitrogen (BUN) (mg/dl)	1.09 ± 0.01	1.07 ± 0.03	1.02 ± 0.04	NS

NS, Non significant (P>0.05)

in running tape water overnight, dehydrated in ascending grades of alcohol and cleared in xylene and then embedded in paraffin. The paraffin sections were cut in 4-6 µm thickness and were stained with Haematoxylene and Eosin method as described by Luna (1968). For the study of haematological profile, blood was collected from wing veins of two birds of each replicated groups at 42nd day. The serum albumin and serum globulin were estimated by using *in-vitro* diagnostic kits. The urea level was estimated by Diacetyl Monoxime Method as described by Varley (1975). The blood urea nitrogen was calculated by multiplying the blood urea content with the factor 0.467 and was expressed in mg/dl. The data were statistically analyzed as per Snedecor and Cochran (1994).

RESULTS AND DISCUSSION

The differences in intestinal villi and crypts development in the birds of different experimental groups can be seen precisely from the Fig.1-3.

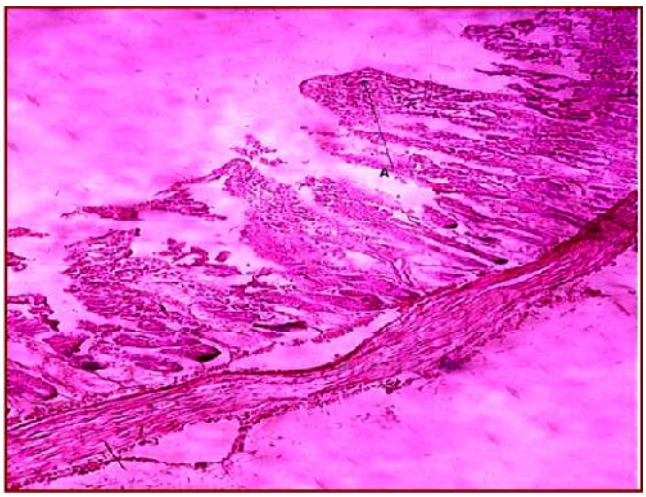

Fig. 1: Photomicrograph of section of duodenum of birds of control group showing villous (A) length in 14th day (x40)

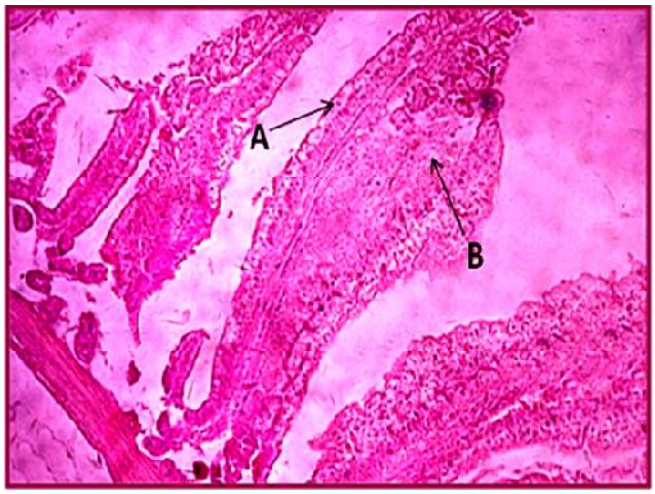

Fig. 2: Photomicrograph of section of duodenum of birds of T_2 (VamDia Forte @ 1kg/ton) group showing maximum length and width of intestinal villi (A) with wide lamina propria (B) having more capillaries (x10)

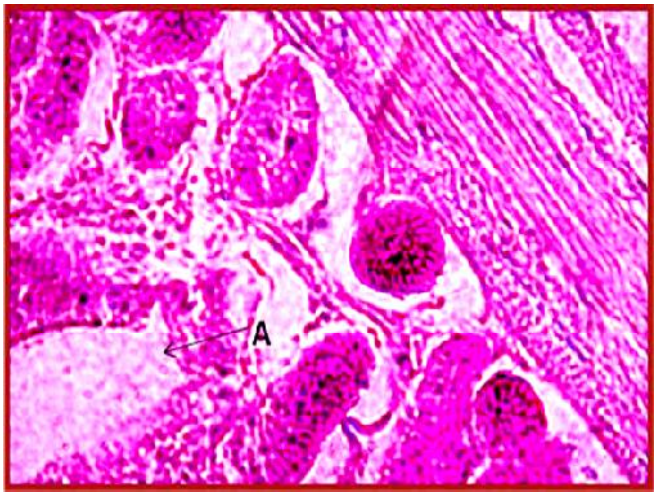

Fig. 3: Photomicrograph of section of duodenum of birds of control group showing fully developed crypt (A) in 14th day (x40)

At the age of 7th day, intestinal histological changes were similar in all the groups. It may be due to very early age. The villi were developed but no difference was seen in its length among the different treatment group. The crypts were not fully developed. They were smaller in size and less in number. On 14th day, in T_1 group, the villous length of the duodenum was increased in comparison to that of the control birds. Though the crypts number was increased their depth was decreased. In T_2 group, the duodenal villi showed maximum length and breadth with wide lamina propria having more capillaries. The crypts depth was decreased with fully developed cryptal epithelial cells. The maximum length and breadth of villi was seen in birds of T_2 group in comparison to T_1 and control and it indicated that the microflora in T_2 (VamDia Forte @1 kg/ ton) provided suitable environment for the enterocytes to grow and develop with longer life which requires less replacement of the cells. (Bedford, 2000; Gilmore and Ferretti, 2003; Markovic *et al*., 2009)

The blood biochemical profile (total serum protein, serum globulin, blood urea and blood urea nitrogen) were not significantly ($P>0.05$) affected by supplementation of VamDia Forte (Table 1). The present results corroborate well with the findings of Das *et al*. (2005) and Singh *et al.* (2009). The values of Blood urea level recorded in this study are in good agreement with the earlier observations by Reddy *et al.* (2005).

CONCLUSION

The present study revealed that the VamDia Forte supplementation @ 1kg /ton provided suitable environment for the enterocytes to grow and develop with longer life requiring less replacement of the cells as evidenced by increased length and breadth of the villi with more vascularization and decrease depth of the crypts.

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