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EFFECT OF PROBIOTIC ON THE GUT MICROFLORA AND HEMATOLOGICAL PARAMETERS OF CROSSBRED PIGS

VANDANA RAI AND G.P. LAKHANI
Department of Livestock Production & Management
College of Veterinary Science & A.H.
NDVSU, JABALPUR (M.P.) 482001

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ABSTRACT

Disease not only affects animal health and well being, but also the economy of the producers. Works on effect of probiotic in pigs have been conducted, however information regarding effect of *Sacchromyces cervisiae* feeding on crossbred early weaned piglets is lacking. Therefore, the experiment was designed to assess the effect of probiotic (*Saccharomyces cervisiae*) on the coliform count and hematological parameters of crossbred weaned pigs. A total of 24 weaned crossbred piglets were selected and distributed randomly in four groups comparising of six in each. *Saccharomyces cerivisae* had been added at level of 0.25%, 0.50% and 1 % in T2, T3 and T4 groups, respectively and T1 was taken as control group. Fecal samples of all the groups were examined for total coliform count at 0, 45th and at 90th days**.** For Red blood cells (RBC) count, White blood cells (WBC) count, Lymphocytes (LYM) %, Granulocyte (GRAN) %, Hemoglobin (HG), Hematocrit (HCT)% and total platelets (PLT) count, blood was collected at monthly interval. Coliform count (x 103/gm) was significantly lower (P<0.05) in T3 and T4 groups as compare to T1 and T2 group. However there was no significant (P>0.05) difference in all haematological parameters among different group at different time interval.

Keywords : Probiotic, Coliform Count, Blood profile, Gut micro flora, *Saccharomyces cervisiae*

Antibiotics and chemotherapeutics in prophylactic dosagees have been used in animal feed to improve animal welfare and to obtain economic benefits. Young animals are subjected to various kinds of stresses in the present farming system, which adversely affects their performance. Young pigs often face post weaning challenges including diarrhoea, low feed intake, body weight loss and these can cause severe damages to intestinal health and function[8]. Weaned piglets need special management and optimal housing. Feed additives such as growth promoting antibiotics, prebiotics, probiotics and acidifiers are sometimes used in weaner diet to improve feed intake and growth. Numerous studies had shown that the commensal intestinal micro biota inhibits pathogens that disturbances of the intestinal microbiota can increase susceptibility to infection, and addition of prebiotics and probiotics increase resistance to infection[4]. A variety of microbial species have been used as probiotics and studies have shown that feeding a diet with synbiotics to young pigs increased lactobacillus and bifid bacterium compared to feeding prebiotics and probiotics alone[7]. It also decrease mortality rate in piglets. Synergistic effects of prebiotics and probiotics can be useful in stimulating beneficial bacteria and improving the gut health. Yeast culture (YC) supplements containing *Saccharomyces cerevisiae***,** which are known to be rich sources of enzymes, vitamins, other nutrients and important co-factors produces a variety of beneficial production responses. Probiotics including yeast and lactobacilli cultures have been reported to improve the performance of weaned pigs[9, 4]**.** However information regarding effect of feeding *Sacchromyces cervisiae* to crossbred (Large White Yorkshire X Desi) early weaned piglets is lacking.

Therefore this study was proposed to know the effect of probiotic (*Sacchromyces cervisiae*) on intestinal microflora and haematological parameters of experimental pig.

MATERIALS AND METHODS

The study was conducted at Livestock Farm, Adhartal, College of Veterinary Science & A.H., NDVSU., Jabalpur (M.P.) for the period of three months.

Twenty four crossbred piglets (Large White Yorkshire X Desi) just after weaning at the age of 2.5- 3 months of either sex were selected and distributed randomly in different groups. The piglets were assigned to four different treatments, each containing 6 animals with equal male female ratio.Probiotics(*Saccharomyces cerivisae)* added at the level of 0.25%, 0.50% and 1 % of feed in T2, T3 and T4 group, respectively and T1 was taken as control group. For bacteriological examinationm,1 gm of faecal sample were collected at 0, 45th and at 90th days from all the groups[3].For Haematological examination RBC count (x10^6/dl), WBC count (x10^3/µl), LYM (%), GRAN(%), Hemoglobin (gm/dl), HCT(%) and total platelets count(x10^3/ µl) blood was collected at monthly interval from marginal ear vein. Data were analyzed using standard statistical method as described by[12].

RESULTS AND DISCUSSION

Coliform count

The results of total coliform count in faeces are presented in table 1.The mean values of coliform count (log value x 10^3/gm) on day 0 were 4.95±0.02, 4.92±0.02, 4.86±0.03 and 4.93±0.02 respectively in T1, T2, T3 and T4 group. At last 90th day of experiment the mean values of T1, T2, T3 and T4 groups were 4.26±0.07, 4.11±0.08, 3.80±0.09 and 4.05±0.04 respectively. At 45th day the mean values of coliform count in T2 group were significantly (P<0.01) different from group T1, T3 and T4. At the last day of experiment T3 group was significantly (P<0.01) different from T1 and T2 group. The T4 group was significantly (P<0.05) different from T1 and T3. Thus it indicates that probiotic lowers the number of harmful bacteria in the gut. Similar findings were reported by [5, 15]. Inclusion of brewer's yeast (3% of feed) in diet of weanling pigs lowers the coliform count significantly[14]. Inclusion of LAB complex together with the mixture of bacillus and *Saccharomyces* increased fecal LAB counts and decreased fecal *E. coli* counts in the grower pigs but not in finisher pigs[1].Double strain and multi strain probiotic had ability to reduce the coliform count significantly in weaned pigs[11]. It is well known that coliforms produces certain toxins and it acts in the small intestine and colon to produce intestinal hyperactivity, secretion leading to diarrhoea. Decreases in coliforms concentrations are significant because yeast inhibits the bacteria responsible for toxin production. However [6] and [10] reported no differences in the microflora of the stomach, duodenum, ileum, cecum, colon of pigs supplemented with live yeast (1g/kg).

Hematological parameter

There was no significant difference in WBC count (x10^6/dl), RBC count (x10^3/µl), LYM(%), GRAN (%), Hb (gm/dl), Platelets (10^3/µl) and HCT(%) among all experimental groups as compared to control group. Similar findings were reprted by[11]. However[2] found that some parameters i.e. Lymphocyte, Leucocyte, Neutrophills tended to increase in supplementation of synbiotics compared to the single administration of Lactobacillus in weaned pigs. Administration of Yeast culture improves the Neutrophill and Platelets counts[13]. These contrary results may be due to change in environmental condition, feeding quality, stress and other factors.

Table 1: Effect of probiotic on total coliform count (log_{10}) in faeces of crossbred pigs

Days	T1	T2	T3	T4
0	4.95 ± 0.02	4.92 ± 0.02	4.86 ± 0.03	4.93 ± 0.02
45th	4.56^{b} ±0.04	4.36^{a} ± 0.04	4.47^{b} ± 0.02	4.50^{b} ± 0.02
90th	4.26^{c} ±0.07	4.11^{bc} ± 0.08	3.80^{a} ±0.09	4.05^{b} ± 0.04

* ^{abc} Means bearing different superscripts within a row differ significantly (P<0.01)

CONCLUSION

It can be concluded that the supplementation with the yeast *Saccharomyces cervisiae* (0.50%) is beneficial in reducing the diarrhoea incidence in crossbred pigs, as it lowers the coliform count significantly, however it does not correlated with any type of changes in haematological parameters of crossbred pigs.

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