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Dietary Supplementation of Chicory Root Powder as Prebiotic Source to Immunity and Faecal Metabolite of Murrah Buffalo Calves

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Abstract—*The present study was designed to investigate the effect of different levels of chicory root supplementation on immunity and faecal parameter in calves. For the present experiment twenty eight Murrah buffalo calves were randomly selected and divided into four groups. All the four groups were fed as per ICAR (2013) feeding schedule except that these were additionally supplemented with 0, 8, 16 and 24 g/d chicory root powder for 90 days. Results showed that total immunoglobulin and faecal metabolite was significantly higher in treatment groups as compare to control. Thus, it may be concluded that the supplementation of chicory root powder may be useful for enhancing health status and performance of calves.*

Keywords*: Prebiotic, chicory, calf, immunity, faecal metabolite.*

1. INTRODUCTION

Diarrhoea is the most common health concern and cause of death during the preweaning period. Calves with diarrhoea require prompt attention and care; failure to treat these conditions in calves can lead to high levels of morbidity and mortality .To overcome these problems the use of antibiotics prebiotics, probiotics and synbiotics came up as a good adjuvant to promote the health (Heinrich *et al.,* 2003). Prebiotic supplementation has gained interest in recent years as a method to improve gastrointestinal health in livestock. It has been provided that prebiotic supplementation may be most effective in times of stress or increased pathogen exposure throughout the calf's lifetime (Quirk *et al*., 2010). Inulin is one of the fructans, naturally occurring in many plants, mostly extracted from chicory root (*Cichoriumintybus*).

2. MATERIAL AND METHODS

A study of 90day duration was undertaken at livestock research center of ICAR-national dairy research institute .Twenty eight Murrah buffalo calves (7-10 d old and 31 ± 2.0 kg of body weight), were randomly assigned into four groups with seven animals in each group. Group I served as control while animals in Group II (PRE 1), Group III (PRE 2) and Group IV (PRE 3) were supplemented with 8, 16, 24 g chicory root powder per calf/day respectively, given orally to individual calf .

3. RESULTS

The results indicated that calves supplemented with prebiotic attained higher ($P<0.05$) total immunoglobin compared to control group. Fecal acetate, propionate and butyrate were significantly ($P<0.05$) increased in all the prebiotic supplemented groups as compared to control.

4. CONCLUSIONS

It could be concluded from the study that chicory root powder has potential for improving of immunity and faecal metabolite calves. However, no major differences were observed between the groups supplemented with 8, 16 and 24 g of chicory root powder hence most optimized results were present in T1 group.

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