

## Comparative Evaluation of Probiotic and Synbiotic for Management of Canine Gastroenteritis

Rahul Sharma<sup>1</sup>, R.P.S. Baghel, Sunil Nayak, Ankur Khare and Shivangi Sharma<sup>2</sup>

Department of Animal Nutrition

College of Veterinary Science and Animal Husbandry

Nanaji Deshmukh Veterinary Science University (NDVSU)

Jabalpur - 482001 (Madhya Pradesh)

### Abstract

In our study, ten (10) mongrel dogs were diagnosed with gastroenteritis. The dogs were symptomatically treated and supplemented with probiotics (5 dogs) and synbiotics (5 dogs). Both nutritional supplements were found effective although synbiotics showed faster improvement of canine gut health.

**Keywords:** Dog; gastroenteritis; probiotic; synbiotic

### Introduction

'Probiotics' term comes from the Greek words 'pro' (in favour) and 'biotic' (life). Probiotics are defined as 'living microorganisms in feed which when taken at certain level provide stability of intestinal microflora'. Fuller defined probiotic as 'live microorganisms that may beneficially affect the host upon ingestion by improving the balance of the intestinal microflora' (Fuller 1989).

Some commonly used probiotics includes *Lactobacillus acidophilus*, *Lactobacillus bifidus*, *Lactobacillus bulgaricus*, *Lactobacillus casei*, *Lactobacillus fermentum*, *Lactobacillus lactis*, *Lactobacillus planterum*, *Lactobacillus ruminis*, *Lactobacillus salivericus*, *Bifidobacterium bifidum*, *Enterococcus faecium*, *Streptococcus faecium*, *Streptococcus thermophilus* and *Saccharomyces cerevisiae* (Simmering and Blaut, 2001).

Synbiotics is a new approach envisaged is to combine both probiotics and prebiotics. This combination will beneficially affect the host by improving the survival and implantation of live microbial dietary supplements in gastrointestinal tract by selectively stimulating the growth and/ or by activating the metabolism of one on limited number of health promoting bacteria. This combination of prebiotic and probiotic is known as 'Synbiotics'. Thus, a symbiotic in its simplest definition is 'a combination of prebiotics and probiotics' (Collins and Gibson, 1999).

Example of Synbiotics includes:

1. Fructo-oligosaccharide and Bifidobacteria.
2. Lactitol and Lactobacilli.

1. Corresponding author.

E-mail: rahul.vet11@gmail.com

2. Doctorate Scholar, Department of Veterinary Medicine

3. Fructooligosaccharide and Lactobacilli.
4. Inulin and Bifidobacteria.
5. Inulin and Lactobacilli.

### History, Clinical Examination and Diagnosis

In our study, ten (10) mongrel dogs presented between January-July, 2019 with history of anorexia, vomiting (3-4 times/day), diarrhoea, lethargy and depression. Clinical examination revealed all dogs to have pale mucus membrane and were dehydrated (moderate-severe). Body temperature was elevated in six dogs (103-104°F). On the basis of history of diarrhea, vomiting and clinical examination, the cases were diagnosed as gastroenteritis.

### Treatment and Supplementation

Symptomatic treatment was undertaken with antibiotic (Ceftriaxone+Tazobactam @ 25 mg/ kg b. wt. BID), Fluid therapy (15-20 ml/ kg b.wt.), Antipyretics, Anti-emetic (Ondansetron @ 0.5 mg/ kg b. wt. BID), Antacid (Ranitidine @) 0.5 mg/ kg b.wt. BID) and Anti-protozoan (Metronidazole @ 20 mg/ kg b. wt. BID) for five days. Recovery in clinical symptoms were observed on fourth and fifth day. Commercially available nutritional supplements were used. They were given only after symptomatic recovery from gastroenteritis. Probiotics @ 1 gram BID (5 dogs) and synbiotics @ 5 gm BID (5 dogs) were advised in standard dose from sixth day, given BID for ten days.

### Results and Discussion

Result were observed and compared on 1<sup>st</sup>, 3<sup>rd</sup>, 7<sup>th</sup> and 10<sup>th</sup> day and interpreted (Table 1) on the basis of appetite and activity of dog (likert scale) (Table 2), faecal score (Waltham faeces scoring system). Results showed recovery was better in group which was supplemented with synbiotics as compared to probiotics.

Probiotic and synbiotic for canine gastroenteritis

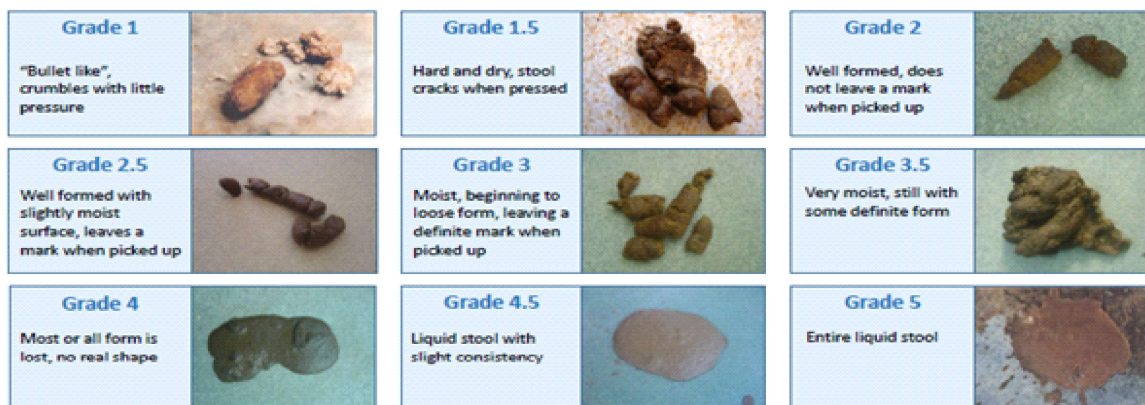


Fig. 1: Waltham Faeces Scoring System

Table 1: Effect of probiotics and synbiotics supplementation in dogs treated for gastroenteritis

Animal Response	Probiotics @ 2 gm BID (n=5)				Synbiotics @ 5 gm BID (n=5)			
	1 <sup>st</sup> day	3 <sup>rd</sup> day	7 <sup>th</sup> day	10 <sup>th</sup> day	1 <sup>st</sup> day	3 <sup>rd</sup> day	7 <sup>th</sup> day	10 <sup>th</sup> day
Appetite (Likert scale)	-	+	++	+++	-	+	+++	++++
Faecal Score (Waltham faeces scoring system)	4.5	4	3.5	2.5	4.5	4	3	2
Activity of dog (Likert scale)	-	+	++	++++	-	+	+++	++++

Table 2: Likert scale for determination of appetite and activity

Poor	-
Fair	+
Good	++
Very Good	+++
Excellent	++++

This is because the synbiotic food supplement includes both live cells of beneficial bacteria and selective substrate; the idea behind that bacterial cells that survive their transit through the upper gastrointestinal tract can quickly and competitively grow because of selective substrate and establish their predominance.

Synbiotic food was found to be more efficient as compared to either probiotic or prebiotic alone (Roberfroid and Delzenne, 1998). Kore *et al.* (2012) also reported that synbiotic provides a healthier alternative than their exclusive use individually from

all aspect of functional properties typically ascribed to probiotics or prebiotics alone in dogs.

**Conclusion**

It is evident that after symptomatic treatment of canine gastroenteritis, supplementation of probiotics and synbiotics were found effective although synbiotics showed faster improvement of gut health in dogs and was economical also.

**References**

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