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Original Research Article

Synbiotic as an Effective Tool to Treat Indigestion in Buffaloes: A Field Study

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A B S T R A C T

Indigestion is one of the most frequently encountered problems in dairy animals. It represents a challenging diagnostic problem because of the non specific nature of manifestations of clinical signs. Irrespective of the cause, rumen health is mostly depressed, and need prompt therapeutic intervention.Ecotas bolus is one such synbiotic and growth stimulant bolus that stimulates rumen microflora and helps in restoring rumen health. Synbiotic refers to food ingredients or dietary supplements combining probiotics and prebiotics in a form of synergism, hence synbiotics

Keywords

Buffalo, Indigestion, Synbiotics

Introduction

Indigestion is one of the most frequently encountered problems in dairy animals. In an epidemiological study on clinical cases, the incidence of tympanitis, impaction and indigestion were 14.26%, 13.29 and 72.45 in cattle and 12.7%, 16.4% and 70.9% in buffaloes, respectively (Joshi, 1980). Kumar (1988), working on ruminant indigestion reported that simple indigestion is the most common finding followed by alkaline indigestion and acidic indigestion, respectively. Although indigestion is one of the most frequently encountered complaints in buiatric practice, it represents a challenging diagnostic problem because of the non-specific nature of manifestations of clinical signs. Irrespective of the cause, rumen health is mostly depressed, and need prompt therapeutic intervention. Various treatment protocols have been developed till date to boost rumen health and overall productivity of an animal. Ecotas bolus is one such synbiotic and growth stimulant bolus that stimulates rumen microflora & helps in restoring rumen health. Synbiotic refers to food ingredients or dietary

supplements combining probiotics and prebiotics in a form of synergism, hence synbiotics (Pandey *et al.,* 2015). Gibson and Roberfroid (1995) defined prebiotics as "a non-digestible food ingredient that beneficially affects the host by selectively stimulating the growth and/or activity of one or a limited number of bacteria in the colon. Salminen (1996) defined probiotic as "a live microbial culture or cultured dairy product which beneficially influences the health and nutrition of the host." They are beneficial strains that can be ingested through the diet in the form of naturally fermented foods or supplements. Probiotics, prebiotics and synbiotics are the new concepts that have been developed to modulate the target gastrointestinal microflora balance (Bandyopadhyay and Mandal, 2014). Since its introduction, the concept of probiotics, prebiotics and the combination of both i.e. synbiotics have attracted much attention. This study was conducted to evaluate the therapeutic efficacy of symbiotic bolus Ecotas on rumen function in cases of simple indigestion.

Materials and Methods

The study involved 48 buffaloes brought with the history of depraved appetite (inappeatance to anorexia) from last 2-3 days, abnormal faeces and reduced milk yield. Detailed clinical examinations of these animals were performed as described by Radostitis *et al.*, (2003). The temperature, pulse and respiration rates of these buffaloes were found within the normal physiological range. Faeces were semi solid to diarrhoeic (in 12). Faecal examination did not reveal any parasitic egg. Rumination was absent in all buffaloes. Ruminal motility ranged from 1-2 /5min and were of weak intensity. Rumimal fluid was collected aseptically using wide bore needle for further examination viz color, consistency, pH, protozoal movement and density. The samples were collected on three occasions on alternate days (1, 3 & 5). Rumen function test was performed as described by Rosenberg (1979) and Srinivasan and Gnanaprkasam (1993). Treatment regimen followed comprised of Inj. Tribivet @ 10 ml IM, Bolus Ecotas (2boli PO BD), powder HB strong (10 gm PO BD) for 3 days.

Results and Discussion

Rumen fluid examination results: Color of the rumen fluid varied from green to brownish green, consistency was watery, maximum rumen protozoa were found dead and non-motile, small ciliates were predominant on day 1 barring 6 cases in which both small & medium protozoa were present and only a few large protozoa were seen. Rumen pH varied from 6.0-7.5. Based on clinical findings and ruminal fluid examination, these cases were diagnosed as simple indigestion.

Supplementation of Ecotas restored the rumen health in 79.17% buffaloes (38/48). Out of remaining 10 buffaloes, only slight improvement could be seen in 4 (8.33%) and 6 (12.5%) buffaloes did not turn up for the treatment after a day or two of treatment, possibly due to improvement in feed intake (rumen function). The rumen motility increased from 1-2/5min to 5-6/ 5 min. After the initiation of therapy large protozoa were found in plenty along with motile medium and small protozoa. During the course of treatment a gradual increase in feed intake was observed and the normal appetite was restored by 3rd day of treatment in 62.5% buffaloes and by 5th day in 16.67% animals.

Treatment was discontinued in animals showing clinical recovery on 3rd day, after 3 days of treatment. The improvement noticed has been summarized in table 1.

Table.1 Rumen function results on day1, 3 and 5 of treatment

	Day 1	**Day 3**	**Day 5**
Protozoan density	+ (30 animals), ++ (18 animals)	+ (2), ++ (10), +++ (18), ++++ (12)	++(4), +++ (5), ++++ (3)
Protozoal motility	30% motile, 70% non-motile	>80% motile (28), 50-80%motile (4), <50% motile (10)	>80% motile (6), 50-80%motile (3), <50% motile (3)
Size of protozoa	Small ciliates predominant	Large, medium & Small ciliates	Large, medium & Small ciliates
Rumen motility	1-2 /5min	5-6 /5min (32) 2-4/5min (10)	5-6 /5min (8) 2-4/5min (4)
Rumen pH	6-7.5	6-7	6-7

Bolus Ecotas^{R} proved to be highly effective in restoring rumen function and resulted in complete clinical recovery. *Saccharomyces cervesiae* stimulates rumen microflora, increases fibre digestion and protein utilization. *Lactobacillus sporogenes* rejuvenates desirable gastrointestinal microflora. Asperillus oryzae improves growth and increases production. Fructo oligosaccharide, the prebiotic nourishes the microflora and thus serves as medium for their growth. The growth factors, copper, zinc and cobalt act as co factors in enzymatic actions. Vitamin H enhances ruminal bacterial metabolism. Methionine enhances the synthesis of glucose for milk production and improves triglycerides and lipoproteins thereby increasing milk fat (Gupta and Gupta, 2007).

Bruno *et al.*, (2009) also recorded improved yields of milk and milk components in heat-stressed multiparous Holstein cows after feeding a yeast culture of *S. cerevisiae*. Maamouri *et al.*, (2014) also concluded that supplementation of *Saccharomyces cerevisiae* at 2.5 10^{10} CFU/day in the diet of dairy cows may have positive influence on milk fat and protein yield (g/cow/day).Yoon and Stern (1996) studied the effects of *Saccharomyces cerevisiae* and *Aspergillus oryzae* cultures on ruminal fermentation in dairy cows and concluded that fungal culture (*Aspergillus oryzae*) stimulated proteolytic and cellulolytic bacterial counts. Proteolytic bacterial counts were also stimulated by yeast culture *Saccharomyces cerevisiae*. *Saccharomyces cerevisiae* and *Aspergillus oryzae*, used alone or in combination, as a feed supplement for beef and dairy cattle increased (P <0.05) the ratio of milk yield/DMI (Chiquette, 1995). *Lactobacillus sporogenes* is a gram-positive, spore-forming, lactic-acid producing bacillus.

The changes this lactic acid bacillus produces shift the environment in support of a complex gastrointestinal flora (Majeed, 1998). The mechanism of action is presumed to be a result of improving gastrointestinal ecology by replenishing the quantity of desirable obligate microorganisms and antagonizing pathogenic microbes (Voichishina *et al.*, 1991). Smirnov *et al.*, (1995) observed a rapid resolution of acute gastrointestinal infection induced by pathogenic bacteria in calves. Copper (Cu) and zinc (Zn) are important trace minerals in dairy cattle feeding. Both elements are widely distributed in the body, as they are part of many enzymes and structural proteins (Goselink and Jongbloed, 2012).

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