

Role of probiotics in Animal Nutrition

P. V. Patil, M. K. Patil and N. E. Gade

College of Veterinary and Animal Sciences, Udgir Dist.Latur, Maharashtra, India

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Microbes are the essential component of the ecosystem. All lives harbor many micro-organisms in their body in a symbiotic relationship with the host in the natural state. The culture of live essential micro-organisms is called probiotics. They play a vital role in the bio-conversion of lignocelluloses feeds, protecting the host from various diseases, and improving the microbial environment in GIT. Probiotics contain a single or combination of beneficial bacteria or fungi, or yeast. The use of probiotics in animal ration restores the normal and ideal flora in GIT. It improves the gut environment required for better digestion and absorption of nutrients from the gut. These micro-floras favours rumen development and contribute to the overall health and performance of the animal.

Keywords: Animal, Gut, Nutrition, Probiotics.

Introduction

The use of live cultures of micro-flora as therapeutic agents to restore the normal microbial population of the GIT was in existence and it is continued till today. The term 'Probiotics' was first time used by Parker in 1974.

Definition: These are the cultures of live micro-organisms used to improve beneficial properties of intestinal micro-flora of the host animal.

Desirable qualities of good probiotics

1. Non-pathogenic, non-toxic to the animal and humans.
2. Able to withstand the concentration of rumen metabolites (enzymes, pH, temperature etc.).
3. Able to compete with changing ecosystem in the rumen.
4. It must be viable on a large scale.
5. Stable in the feed while mixing, processing and storage.
6. Have to survive and multiply in GIT.
7. Must be beneficial to the host animal.
8. Have the capacity to proliferate *in vivo*, *in vitro* conditions.
9. Must be a natural component of GIT must adhere to mucosa.

Mode of action of Probiotics:

1. After microbial metabolism increases favorable enzymes and decreases harmful enzymes produced by pathogens.
2. Increase phagocytic activity and immunoglobulin level and improve immune system or immune-competence in birds.
3. Consume or destroy the potentiality of dangerous metabolites or waste products of metabolism.

Effects of probiotics feeding:

1. Improve feed intake, feed efficiency, growth rate, nitrogen balance, nutrient digestibility and milk production.
2. Create favourable environment to enhance digestion and stimulate immunity.
3. Reduce egg/serum cholesterol level and viscosity of chime.
4. Influence the activity of rumen microbes, stabilize the rumen environment and prevent gas formation and intestinal infections.
5. Favours rapid adaptation to solid foods by the pre-ruminant calf.
6. In laying birds- increase egg size, mass, weight but not the egg quality.

Types/ sources of probiotics

The bacteria and yeast cultures are the two primary sources of probiotics. They can be used alone or in combination, but the effect on animal performance is better when supplied in capsule, paste, granules, or powder form through feed or water. Soon after birth, they are commonly used in young ruminants by drench in milk. The selection of probiotic species of micro-flora depends upon the types of diet, age, species, the health of animal existing conditions, availability and cost in the market.

1. Bacteria:

- a) *Lactobacillus lactis*, *L. bulgaricus*, *L. bifidus*, *L. brevis*, *L. cellubiosus*, *L. ferment*, *L. sporogenes*, *L. acidophilus*.
- b) *Streptococcus faecium*, *S. lactis*, *S. thermophilus*
- c) *Pedococcus halophitus*, *P. pentosaccus*.

2. Yeast cultures

3. **Fungal:** *Aspergillus niger*, *Saccharomyces cervisiae*, *Candia pintolopesi*.

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