

MiCroBial Animal Probiotic Overview

MiCroBial Animal Probiotics - Probiotics for better health of animals

Probiotics are defined as microbial food supplements which beneficially affect the host animal by improving its intestinal microbial balance. The probiotics will improve feed conversion for the target species, reduced morbidity or mortality and benefits for the consumer through improved product quality. A combination of probiotics with different mechanisms of action could amplify the protective range of bio-therapeutic preparations and the potentiated probiotics are more effective than their components separately. Bacterial probiotics are effective in chickens, pigs and pre-ruminant calves, whereas yeasts and fungal probiotics were given better results in adult ruminants. Probiotics able to enhance the growth of many domestic animals improved the efficacy of forage digestion and quantity and quality of milk, meat and egg. Probiotics protects animals against pathogens, enhanced immune response; reduce antibiotic use and shows high index of safety.

MiCroBial is a powerful combination of active micro-organisms that creates a broad range of beneficial enzymes with the remarkable ability to improve animal health. It is a 100% organic and bio-degradable culture that is safe for humans, animals and the environment.

Probiotics have been emerging as a safe and viable alternative to antibiotics for increasing performance in livestock.

The claims made for probiotics are many and varied but it is not always possible to provide good scientific evidence to support them. However the potential benefits that can arise from applications of the probiotic concept are shown as below:

Potential beneficial effects of probiotics for farm animals.

- Greater resistance to infectious diseases
- Increased growth rate
- Improved feed conversion.
- Improved digestion.
- Better absorption of nutrients
- Provision of essential nutrients
- Improved milk yield
- Improved milk quality.
- Increased egg production.
- Improved egg quality
- Improved carcass quality and less contamination

Preventive & Control Measures

Effective management of the health of animal requires consideration of delicate balance between the host, pathogen. Some of the important strategies for gut health management have been outlined below, Sustainable approaches to modulate the gut micro flora in animals for preventing gut diseases.

- The use of selected bacteria to inoculate the gut (probiotics)
- Specific nutrients promoting the development of selected bacterial strains (prebiotics) in gut.
- Specific natural compounds (mostly derived from yeast and herbal extracts, so called "phytobiotics") capable of modulating the micro flora towards a favorable composition.
- Favoring the development of beneficial bacteria and inhibiting potentially pathogenic micro-organisms in gut.

Mode of Action of Probiotic in Disease Control

The effect of probiotics is linked to the gastrointestinal tract and effects on incidence of diarrhea and other gut infections were expected. In general, the mode of action of probiotic feed additives is mainly based on

- Competitive exclusion
- Bacterial antagonism
- Immune modulation

Competitive Exclusion

Competitive exclusion is defined by the ability of normal micro flora to protect against the harmful establishment of pathogens. The concept of competitive exclusion indicates that cultures of selected probiotics supplemented to the feed, compete with potentially harmful bacteria in terms of adhesion sites and organic substrates (mainly carbon and energy sources). The adhesion to the digestive tract wall could be for different purposes, to prevent colonization by pathogenic microorganisms or to compete for nutrients.

Competitive Adhesion to Digestive Track Wall to Prevent Colonization of Pathogen

Detrimental bacteria need to become attached to the gut wall to exert their harmful effect. Herefore, an expected effect of the addition of probiotics to the gastrointestinal tract is an increase in normal micro flora colonization with inhibition of the adhesion of harmful pathogens on the intestinal epithelium, thereby blocking receptor sites and preventing the attachment of other bacteria including harmful species. By doing so, the probiotic bacteria exclude pathogens and thus prevent them from causing infection.

Competing with Pathogen for Nutrients in Gut

Probiotics may compete for nutrients and absorption sites with pathogenic bacteria. In addition, competition for energy and nutrients between probiotic and other bacteria may result in a suppression of pathogenic species. The gut is such a rich source of nutrients that it may seem unlikely that microorganisms could not find sufficient food for growth. Probiotics possess a high fermentative activity and stimulate digestion. Lactobacilli are known to produce lactic acid and proteolytic enzymes which can enhance nutrient digestion in the gastrointestinal tract. Different studies demonstrated that probiotics maximized crude protein and energy digestibility compared with those in non-probiotic treatments. However, it should be noted be that the environment only has to be deficient in one essential nutrient in order to inhibit microbial growth.

Bacterial Antagonism

Probiotic microorganisms, once established in the gut, may produce substances with bactericidal or bacteriostatic properties. Bactericidal activity: Lactobacilli ferment lactose to lactic acid, thereby reducing the pH to a level that harmful bacteria cannot tolerate. Hydrogen peroxide is also produced, which inhibits the growth of Gram-negative bacteria. These substances have a detrimental impact on harmful bacteria, which is primarily due to a lowering of the gut pH. A decrease in pH may partially offset the low secretion of hydrochloric acid in the stomach.

Neutralization of Enterotoxins Produced by Pathogens

Probiotic bacteria produce a variety of substances that include organic acids, antioxidants and bacteriocins. These compounds may reduce not only the number of viable pathogenic organisms but may also affect bacterial metabolism and toxin production. Bacteriocins produced by lactic acid bacteria have been reported to be able to permeate the outer membrane of gram-negative bacteria and subsequently induce the inactivation of gram-negative bacteria in conjunction with other enhancing anti-microbial environmental factors such as low temperatures, organic acids and detergents. In addition, they can prevent amine synthesis. Coliform bacteria decarboxylate amino acids to produce amines, which irritate the gut, are toxic and are concurrent with the incidence of diarrhea. If desirable bacteria prevent the coliforms proliferating, then amine production will also be prevented.

Management of Disease Control

Avoidance of pathogens: This can be done through selection of specific pathogen free animal feed, keeping clean environment, filtration and sanitization of water before intake.

Improving host conditions through good nutrition and immunostimulation: A number of microbial molecules such as feed additive probiotic and prebiotics have been shown to stimulate the non-specific immune mechanisms in animals.

Improving environmental conditions: The environment has a greater role and significant impact on animals health, growth and production .Most disease problems are triggered by deterioration of water and soil quality. Application of probiotic can capable of oxidizing toxic wastes and be useful in improving soil & water quality. .

MiCroBial Technologies

The core MiCroBial Technologies provides a natural biocatalyst made via a novel fermentative process that has been continually refined by microbiologist in India. MiCroBial Technologies probiotics consists of a select consortium of bacteria, enzymes, nutrients and co-factors that performs different functions of inhibiting growth of pathogens. These microbes produce different types of enzymes as amylase, Protease, Lipase, Cellulase etc. MiCroBial Technologies probiotics works in aerobic and anaerobic conditions as it contains aerobic and facultative anaerobic microbes.

Benefits of MiCroBial Technologies

- Provides probiotics and enzymes for better metabolic activity and higher productivity.
- Helps to achieve healthy growth and maintains the peak milk production.
- An ideal support for improving fertility.
- Increased immunity in young animals and promotes early recovery and shorter convalescence .
- Enhances gut health and have a favorable effect on health and production indices of cattles.
- Exerts a beneficial role in the rumen or lower digestive tract by improving the digestion of various nutrients.
- Reduce incidence of diarrhea and reduced counts of intestinal coliform bacteria.
- Reduce risk of pathogen colonization and limit shedding of human pathogens.
- Increase body weight gain
- Increase food conversion ratio (FCR)
- Provide an alternative to use of antibiotics and its side effects on animal health.

Composition

MiCroBial Technologies probiotics is a consortium of probiotics belongs to Bacillus, Lactobacillus. Yeast, Herbal extract and enzymes etc

Application of MiCroBial Technologies Probiotics

Mixing of product : MiCroBial Animal Probiotics can be mixed with fresh water or animal feed

Rule of thumb : Recommended product dosage can be mixed with 10-20 L plastic tank with fresh water or animal feed as mentioned in recommended dosage

Dosage -

Adult cattles : 25 to 50 gm/day

Calves : 20 to 40 gm/day

Feed mixing : 1 kg per 100 kg of feed

Storage:

Product is delivered in sealed, moisture proof packaging. Product should be stored in a cool dry location, out of the sun and protected from insects. Once opened, MiCroBial™ Technologies Probiotics must be kept dry in an airtight container to prevent activation. Do not Freeze

Product shelf life:

1 year (minimum) under standard warehousing/office conditions

For dosing concentration and application, please contact to our technical team.

Please refer to the MiCroBial Technologies website for the appropriate MSDS, www.microbialtech.com