Vermate (Reg no V25109):

Probiotic use and Application

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Introduction

The soil environment can be regarded as the host for most microbial species on earth. It is a well known fact that animals, when given the choice, would prefer to drink dirt water than water that is unspoiled with soil. As a matter of fact, most animals in nature will walk halfway into a pond before drinking. The reason for this is to stir up the silt at the bottom of the pond with their feet before drinking. By doing so they ingest all the healthy soil microbes, trace minerals and humus or humates that collects at the bottom of the pond through rain wash off. This is nature's way of replenishing the rumen microbes on a daily basis.

In modern agriculture animals are prevented from replenishing their rumen microbes in a natural way. The result is an endless cycle of sickness management that results in significant financial losses.

Vermate product is developed with the aim of restoring the ruminant animal's link with nature within a modern agricultural environment.

Microbes from a healthy soil environment are therefore used to construct the microbial component in the Vermate product. The second component that makes the Vermate product unique is the addition of humic acids or humates that is derived from soil humus. The most outstanding characteristics of humates is the ability to provide micro-minerals, act as a chelating or carrying agent for nutrients and metabolic waste and also its ability to act as an immune stimulating agent in the body.

Microbial Interaction

Vermate makes use of the vast diversity of soil microbes to supplement the rumen microbes on a daily basis. The aim is to keep the rumen microbes as close as possible to that of animals that would have natural exposure to soil microbes.

The equation therefore is simple – the more microbes in the stomach the better the nutritional uptake and the better the health of the animal. Apart from the cumulative effect obtained from the vast number of different microbial species in the Vermate product, one major difference of Vermate with commercial probiotics is the occurrence of nitrification and denitrification bacteria. These are soil bacteria that enable the efficient breakdown and conversion of nitrogen in feed rations into dietary proteins. Most commercial probiotics consist only of lactic acid bacterial strains or yeasts. These strains do not possess specific nitrogen breakdown and conversion characteristics. Evidence of this comes from people that use Vermate in feed rations that experience a huge reduction of ammonia smell in animal waste and urine. Efficient break down and processing of nitrogen in an animal's metabolic system is a key factor in improving the animal's immune system. Ammonia and nitrates that are not efficiently processed and excreted from an animal's system is circulated back into the animal's blood stream. This is a major cause for a weakened immune system that leads to lower production levels and diseases.

Another attribute of the Vermate product is the use of Duddingtonia fungi. These fungi have the ability to control nematode parasites and liver fluke in ruminant animals. This provides a powerful tool for parasite control on a pro-active maintenance basis.

Humates and Animal health

It is a well known fact that micro-organisms are responsible for the breakdown of organic material in nature. It is a less known fact that humus or humic acids are formed in the process. Humic acids are formed when the micro-organisms that feed on organic material dies off and mineralize. Various components such as DNA, RNA, mitochondria and other cellular components break down and rearrange themselves to form humic and fulvic acid molecules. Humic and Fulvic acid has proved to be one of nature's most powerful organic electrolytes and it serves to balance cell life. When organic electrolytes are introduced, the individual cell is restored to its normal chemical balance and its electrical potential where otherwise disintegration and death would occur. Where beneficial microbes help to balance pH on a macro level, humates helps to balance pH and electrochemical potential at a cellular level. The result is

improved mineral transfer into the cell that result in improved nutrient uptake; improved restoration of damaged cells in the case of illnesses or injury and also higher resistance against cell degradation.

Humic Acid Trace Minerals

Most trace minerals in their elementary form can be toxic to animals and humans even at very low levels. Plants have the ability to absorb and chelate toxic elements in their plant tissue to a more acceptable form for humans and animals to consume. Microbes that feed on decaying plant material absorb these elements and take the process even further to ensure that when they die off and form humic acid molecules, the trace minerals are even further chelated and diluted in order to be safe and absorbable for animal and human consumption. Some trace elements that were detected in humic acids include the following:

Aluminum	Chlorine	Hafnium	Molybdenum	Rubidium	Terbium
Antimony	Chromium	Holmium	Neodymium	Ruthenium	Thallium
Arsenic	Cobalt	Indium	Nickel	Samarium	Thorium
Barium	Copper	Iodine	Niobium	Scandium	Thulium
Beryllium	Dysprosium	Iridium	Osmium	Selenium	Tin
Bismuth	Erbium	Iron	Palladium	Silicon	Titanium
Boron	Europium	Lanthanum	Phosphorus	Silver	Tungsten
Bromine	Fluorine	Lead	Platinum	Sodium	Vanadium
Cadmium	Gadolinium	Lithium	Potassium	Strontiu	Ytterbium
Calcium	Gallium	Lutetium	Praseodymium	Sulfur	Yttrium
Cerium	Germanium	Manganese	Rhenium	Tantalum	Zinc
Cesium	Gold	Magnesium	Rhodium	Tellurium	Zirconium

Vermate Health Aspects

Blood Properties

Red blood cells have the ability to carry more oxygen when in the presence of humates. Healing of injuries as a result of additional oxygen is therefore much quicker. Humate molecules allow higher oxygen levels in the blood with a quicker breakdown of lactic acid in overworked and stiff muscles. Recovering from stiffness in hardworking horses is therefore much quicker.

Mineral Transfer

Humic acid allows easier transfer of minerals from the blood to the bone and tissue cells through the chelating or mineral carrying ability. This ensures higher calcium levels in bones as well as uptake of nutritional substances.

Literature reports additional transport of iodine from foods into the thyroid glands due to the presence of humates. This results in stabilizing of hormonal functions as well as improvement of fertility in animals. Improved mineral transfer due to chelating properties of humates also means enhanced removal of metabolic waste and toxic elements in the body.

Stress Management

Humates in the Vermate product block or reduce the production of stress causing hormones allowing animals to be less affected by the outside stimulus of stress causing conditions. Animals on Vermate feed more leisurely and perform better in competition or stress related circumstances.

Colic/Acidic stomach

Concentrate fed animals are less prone to acidifying stomachs and colic due to the buffering effect of humates as well as microbes in the Vermate product. The risk of stomach acidosis or colic is therefore greatly reduced when Vermate is given on a daily basis. If acidosis or colic does occur, high dosages of Vermate enable the cause of the colic to be dissolved.

Cell Mutation

Humates within the body work with DNA and cellular division, tending to prevent cellular mutation such as cancer cell formation. Humic acids also significantly accelerate the healing process of stomach ulcers.

Somatic Cell Count in milk and Mastitis teat infection

The somatic cell count in milk gives an indication of the amount of dead cells that a cow releases into her milk as a result of normal metabolic functions. The somatic cell count is used to measure the quality of milk and can be used as a very efficient tool to assess the animal's overall health. High somatic counts are often associated with mastitis teat infections.

Humates have the ability to make sugars more complex which is a healthier form for the body to absorb. This allows the manufacturing of glycoproteins that attach to the Killer and T cells which regulates the immune system. The humate glycoproteins therefore acts as a communication link between these cells and prevent either the T or Killer cells from becoming out of balance. Excessive killer cells can attack bone and joints causing arthritis. Conversely, excessive T cells can cause auto-immune diseases whereby the body breaks down its own cells. Humates therefore assist the immune system to function in balance and helps it to recognize its own dead cells thereby reducing infection. A reduction in somatic cell counts in milk from dairy cows has been observed due to the immune regulatory properties of Vermate. The incidence of milk allergy and diarrhea in lactating calves and foals have been greatly reduced by reducing the somatic cell counts in the mother's milk.

Anti-inflammatory Properties

Humic acids are known to exhibit anti-inflammatory properties. Not only do the humates relieve swelling from joint inflammation, it bonds to the collagen fibers to aid in repair of damaged tendons and bone. Recovery time for tendon injuries has been shown to increase by as much as 75% with localized humate treatments.

Detoxifying Properties

Life sustaining minerals are placed in a chemical or chelated state that is readily absorbed by cells. On the other hand, toxic elements and metabolic waste are placed in a chemical state that is less absorbable through cellular metabolism and more easily expelled from the system.

Odor Reduction

Humates decrease volatile ammonia in animal waste through chelation interaction, thereby reducing ammonia odor. It also improves the nitrogen to phosphorus ratio in animal waste which facilitates improved microbial breakdown and less odors.

Miscellaneous Properties

- Animals being fed humates on a regular basis are less lightly to react to the possible intake of poisons or toxins.
- Humates have the ability to increase fertility.
- Bone growth keeps up with muscle growth, reducing the risk of contracted tendons in growing foals.
- Coat condition improvement.
- Exhilaration of hoof growth and improved hoof quality.
- Reduction in healing time of tendon and muscle injuries.
- Improves digestion and absorption of nutrients.
- Humates and soil microbes have a great effect in reduction of mastitis as well as lung infections.
- Humates and soil microbes reduces diarrhea in lactating animals
- Due to improved digestion as a result of beneficial microbes improvement on feed uptake as well as feed conversion ratios have been observed.
- Horses with colic that were treated with high dosages of Vermate showed immediate relief as well as complete recovery from symptoms.
- Improved fertility as well as reduction in foot rot has been observed in dairy cows and sheep.
- Reduction in gall sickness as well as red water has been observed in dairy cows and calves.

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