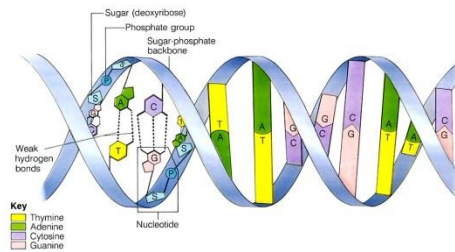


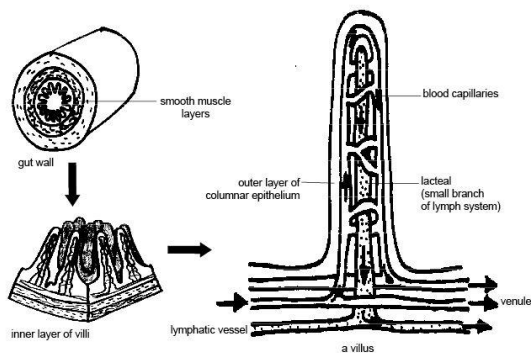
Nucleotides for Horses.

What nucleotides are and the benefits of feeding nucleotides to horses.



Nucleotides are molecules that make up the structural units of DNA and RNA. Nucleotides are essential to create new cells in the horse's body and to transport oxygen around the body. They are found in low levels in a horse's natural diet and are formed by horses' bodies 'recycling' dead cells, however there are great benefits in feeding additional nucleotides.

The benefits of having higher levels of nucleotides in the diet include:



Digestion and Nutrient Absorption: Nucleotides

increase the length and surface area of intestinal villi. Villi line the intestines and are responsible for absorbing the nutrients, vitamins and minerals from the food that the horse consumes. Increasing the length and surface area of the villi means that more nutrients, vitamins and minerals are absorbed from the food.

Nucleotides Support Primary Functions of the GI Tract

Although the equine GI tract is covered in mucus, the acids and enzymes nevertheless take a toll on the enterocytes (absorptive cells) lining the gut wall. The entire intestinal lining is replaced every three days by cells that are constantly dividing.

Cell division throughout the gut requires the replication of millions of DNA molecules every second. Each individual DNA molecule is comprised of several billion nucleotides. This process represents an impressive amount of energy-intensive chemical synthesis. Clearly, maintaining an adequate level of nucleotides is a major, ongoing issue for the digestive system. Thus, adding nucleotides to a horse's diet:

- improves cell turnover, repair and growth
- allows the body to down-regulate the synthesis of nucleotides
- supports the intestinal lining in the GI tract
- enhances enterocyte growth for greater nutrient absorption

Dietary Nucleotides Increase Mucosal Thickness

Nucleotides optimize the natural protective mechanisms of the mucosal lining, helping to maintain a healthy GI tract. Supplementing a horse's diet with nucleotides increases mucosal thickness and protein levels through increased availability of genetic precursors. It also speeds up intestinal recovery after chronic diarrhea and intestinal damage.

Fitness, Stamina and Fatigue: Nucleotides improve the production of red blood cells. This means that more oxygen can be transported around the body, which improves levels of fitness and stamina, and reduces the onset of fatigue and the level of lactic acid produced.

Muscle Recovery and Function: If nucleotides are fed as a supplement to the diet this reduces the number of steps to form cells. This quickens the recovery rates for the muscles that undergo stress as part of a training schedule. The better and faster that these muscles recover the better the muscle function.

Injury recovery: Increased oxygen transportation provided by nucleotides means that more oxygen will get to the damaged area. Coupled with the increase in the rate of cell replication means that nucleotides can help to reduce the time taken to recover from injury.

Immunity: Nucleotides help the rate of replication of immune cells. Thereby improving the horse's immune system and helping them to fight bacterial and viral infection.

Key Points about Nucleotides

There are 5 nucleotides that must be provided in balanced amounts to allow for absorption.

Nucleotides are naturally available through recycling dead cells (inefficient), from the liver (level available reduced under times of stress/disease), through cellular production (slow) and from the diet (low levels & low availability).

Animals can't store nucleotides, hence requiring a readily available source.

Nucleotides need to be readily available to horses:

- Under stress
- Suffering from low immunity
- During growth (e.g. foals/youngsters)
- Under high productive performance (e.g. breeding)
- Undergoing high levels of exercise

Nucleotides are an essential nutrient for rapid cell replication. Cells/areas requiring rapid cell multiplication include immuno-competent cells, gastrointestinal cells, intestinal flora cells, liver cells and cells of reproductive organs.

Nucleotides' role in intestinal development is to increase length and number of villi. Vital for mucosal development (1st line of defence in the gut).

Nucleotides' role in immunity: Considering that 70% of an animal's immune system is in their GI tract, the immune system itself is directly affected by the health of the digestive system.

Nucleotides are immune facilitators (not stimulators) so only help when required by the immune system. They quickly help the immune system to respond to and destroy a disease/infection. Immune stimulators can be dangerous and over stimulate the immune system = immune system shut-down = disease/ infection can enter.

Additional benefits of Nucleotides to Fibregenix Prime Original Balancer:

Nucleotides to promote improved weight/condition: Nucleotides will increase length and number of intestinal villi, promoting maximum absorption particularly combined with high level of yeast probiotic.

Mares, foals & young stock – Nucleotides will help prevent the normal 'dip' of antibody levels in lactating mares, for the continual promotion of health in both mare and foal. Will further prevent digestive upset during weaning/general gastro upsets. Lots of nucleotides needed for development of foal digestive tract as no dead cells available for 'recycling'. For brood mares – valuable to aid placenta development/milk production.

Low-level competition/show horse: attending shows = greater risk of infection/disease. Nucleotides will aid the immune system in recovering from this. Also promote excellent condition and health.

Additional benefits of Nucleotides to Fibregenix Platinum Pro Balancer:

Competition horse: High performance horses always require high levels of cell proliferation. With nucleotides there will be better production, absorption and utilisation of oxygen so a level heart rate during exercise. Additionally, less cells broken down and more active red blood cells. This means increased oxygen carrying capacity. Much lower levels of lactic acid build up = reduce risk of azoturia; better recovery after exercise.

Veteran horse: Nucleotides will help to promote excellent health, condition, and weight. Ensure healthy digestion (often compromised with old age) and aid the immune system when required (again, often compromised with old age).

Horse under extreme stress – e.g. recovering from antibiotics/severe digestive upset. Aid the digestive system (often compromised/unbalanced following antibiotic treatment).

Additional benefits of Nucleotides to Fibregenix Lami Low-Cal Balancer:

Recovering laminitic: Rapid cell proliferation is required for recovery of damaged laminae; digestive system likely to have been compromised from excess toxins.

Overweight/good doer: if diet limited, nucleotide/vitamin/mineral levels = below recommended and even lower than usual.

Hoof supplement: Rapid cell proliferation is required to aid the growth of the hoof wall.

Many human sports products contain nucleotides, due to their lactic-reducing and recovery-aiding properties. Nearly all the baby milk formula products contain nucleotides due to them being an immune facilitator and aiding digestion development.

All feed contains a level of nucleotides. However, in ingredients used for horse feeds these are in very low levels. Furthermore, they have extremely low availability to the horse (around 5-10%) and are hard to digest due to their protein coating.

There are very few companies that are giving horse owners the added benefits from feeding Nucleotides to their horses. Fibregenix was the 1st balancer supplement company in Australia to include purified nucleotides. The Fibregenix feed balancers – Super Conditioning, Platinum Performance and Lami Lo-Cal contain a purified nucleotide supplement which has a 95% availability rate, to balance the limited levels of nucleotides available in the current diet.