



GUT HEALTH

TRIPLE CHECK



In today's equine environment, gut health is increasingly synonymous with animal health. The Kemin Gut Health Solutions program encompasses many health priorities, such as nutrient digestion and absorption, gut integrity, immune response and more. Proper gut health leads to the absence, prevention and avoidance of disease.

UP TO **70%**
OF THE IMMUNE
SYSTEM
RESIDES IN THE
GASTROINTESTINAL
TRACT (GIT).¹

1. Vighi, G., Marcucci, F., Sensi, L., Cara, G. D., & Frati, F. (2008). Allergy and the gastrointestinal system. *Clinical & Experimental Immunology*, 153, 3-6. doi:10.1111/j.1365-2249.2008.03713.x



Kemin has been a proactive leader within the gut health industry. By using decades of scientific research, thorough testing and customer feedback, Kemin created its multi-faceted **Gut Health Triple Check** approach to provide a broad platform of solutions.

GUT HEALTH BEGINS AT BIRTH

A long-term, comprehensive approach to equine gut health is crucial — Kemin solutions can support and protect your horse's GIT from birth. Proper gut health support will strengthen intestinal integrity, ensure a healthy microbial balance and support immune function, which may reduce the incidence of Leaky Gut Syndrome (LGS).

The interaction of these factors helps promote:

- Improvement in performance and overall wellbeing
- Better nutrient digestion and absorption
- Healthy metabolic function and energy utilization
- Absence, prevention and avoidance of disease
- Improved bone and joint health

HEALTH CHALLENGES CREATE GUT INFLAMMATION

When gut health is compromised, inflammation often occurs. Triggers such as oxidative stress, mycotoxins, social stress, exercise or microbial imbalance can spark this process. Many of these triggers also impact one another (e.g., social stress leading to microbial imbalance), which can lead to a cycle of inflammation — ultimately leaving animals more susceptible to illness. This can impact the horse's quality of life, reduce performance and have a negative impact on overall wellbeing.

Pathogens impacting equine health:

- *Clostridium difficile*
- *Salmonella*
- *Clostridium perfringens*
- *Rhodococcus equi*
- *Escherichia coli*
- *Streptococcus equi*

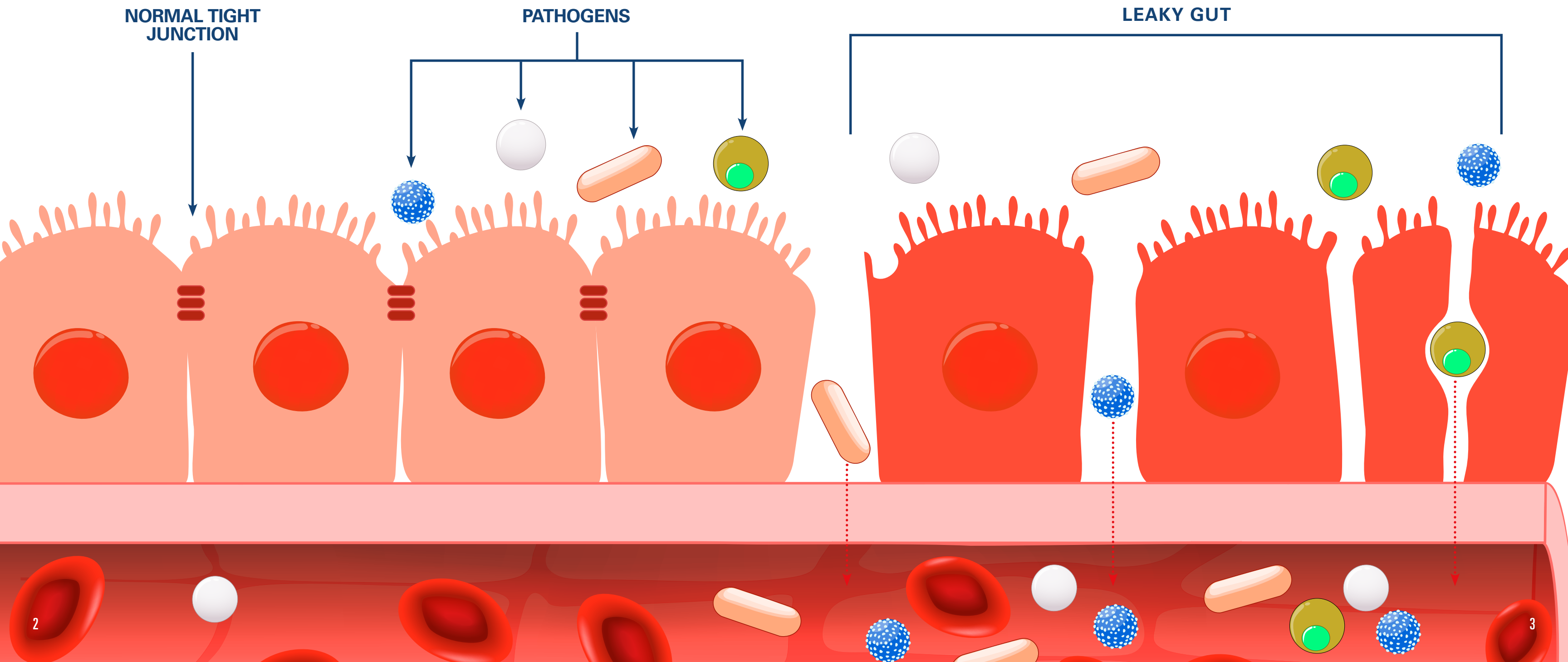
BUILD A BARRIER AGAINST LEAKY GUT

THE BEST WAY TO PREVENT LGS OR HELP HEAL A LEAKY GUT IS THROUGH GOOD NUTRITION AND ATTENTION TO GUT HEALTH.

The intestinal barrier is made up of a layer of epithelial cells, which prevent harmful pathogens and toxins from entering the system — also known as **Leaky Gut Syndrome**.

The intestinal barrier is regularly exposed to up to 10 trillion microorganisms, making it extremely important to keep it functioning properly. Additionally, up to 70% of the immune system resides in the gastrointestinal tract, so preparing the animal for a challenge is imperative.

By upregulating the proteins making up tight junctions, the barrier is built stronger, reducing toxin transfer and inflammation, and helping to maintain proper nutrient absorption for optimal animal performance.



GUT HEALTH TRIPLE CHECK

Recently, intestinal health has been elevated to the same level of importance as other management or feeding practices. The Kemin Gut Health Triple Check helps you establish the intestinal integrity and protection your horse needs.

This program serves as a support system to **CLEAN UP** contaminants in feed and water prior to consumption, **BUILD UP** intestinal strength and the immune system to reduce Leaky Gut Syndrome and **KNOCK OUT** harmful pathogens for a healthier and better performing horse.

Over the years, Kemin has researched a variety of approaches to improving gut health — ways to positively impact beneficial bacteria and optimize nutrient digestion and absorption. Improving equine gut health involves a comprehensive focus on the feed going into the animal, integrity of the intestinal wall and pathogen reduction. Each of these elements are interconnected, and all must be checked to optimize gut function and health.



A COMPREHENSIVE FOCUS
ON CONTAMINANT MITIGATION,
INTESTINAL INTEGRITY AND
PATHOGEN REDUCTION.

CLEAN UP • BUILD UP • KNOCK OUT

CLEAN UP

HEALTHY HORSE

When gut integrity is intact, contaminants from feed and water move through the horse with little negative impact to the animal or its health.

COMPROMISED HORSE

If contaminants in feed and water are consumed, and the animal is experiencing leaky gut (due to strain from stressors like heat, feed changes, disease, etc.), the contaminants could invade the gut lining and potentially move into the bloodstream, going systemic and causing major health and performance issues.

HELP PREVENT THE PREVENTABLE

Safeguarding feed and water quality begins with protecting raw materials as they arrive at the feed mill and continues through manufacturing and storage.

Target specific performance-robbing contaminants using the following Kemin Gut Health Solutions:

ENDOX[®]

Myco CURB[®]

KALLSIL[®]



SAFEGUARD
YOUR FEED AND WATER QUALITY

BUILD UP

Intestinal integrity is all about maintaining the strength of the intestinal lining to maximize nutrient absorption and preserve a protective barrier. This intestinal barrier is made up of a layer of epithelial cells, which prevent harmful pathogens and toxins from entering the system (i.e. leaky gut) and are critical for fluid and electrolyte secretion. The intestinal barrier is regularly exposed to up to 10 trillion microorganisms, making it extremely important to keep it functioning properly.²

To strengthen the barrier, the focus is on reinforcing the tight junctions and minimizing cell damage. By upregulating the proteins that form the tight junctions, the barrier's integrity is improved, reducing the passage of toxic substances. The barrier can also be strengthened and proper nutrient absorption can be maintained if the incidence of lesions is reduced or if they

can heal more quickly after a pathogen challenge has occurred.

Additionally, since up to 70% of the immune system resides in the intestine, preparing the horse for a challenge is important. By building up the immune cells, the horse can improve its ability to fight off disease and maintain performance during a challenge.³

Strengthen the intestinal barrier and immune system to maximize nutrient absorption and inhibit harmful pathogens or toxins with the following Kemin Gut Health Solutions:

 Aleta™

 ButiPEARL™ Z EQ

 LYSOFORTE®

KNOCK OUT

A healthy microbial balance provides protection against pathogens and contributes to the overall wellbeing of your horse. To achieve this balance, knocking out potentially harmful pathogens is necessary. Controlling and inhibiting pathogens can encourage the growth of beneficial bacteria that produce metabolic substrates like vitamins and short-chain fatty acids that stimulate the immune system.⁴

BENEFITS OF KNOCKING OUT PATHOGENS IN THE GASTROINTESTINAL TRACT:

- Improved nutrition
- Reduced pathogen levels
- Development of proper intestinal morphology
- Enhanced immune function

Balancing microbiota to promote gut health diversifies the complex community of microorganisms living in the digestive tract of your horse. Knocking out harmful bacteria to encourage beneficial bacteria promotes a healthy GIT by stimulating the immune system and protecting against pathogens.

Support intestinal balance to inhibit or eliminate harmful pathogens from infiltrating the body with the following Kemin Gut Health Solution:

 CLOSTAT®



THE INTESTINAL
BARRIER IS REGULARLY
EXPOSED TO UP TO
10 TRILLION
MICROORGANISMS²



PROTECT
AGAINST PATHOGENS

GUT HEALTH TRIPLE CHECK SOLUTIONS FOR EQUINE

Help your horse perform at the highest level and improve its overall health. Establish the intestinal integrity and protection your horse needs using our Gut Health Triple Check program.

Aleta™

Aleta offers a concentration greater than 50 percent of 1,3-beta glucans. Beta glucans have been used in humans and animals as a way to enhance host protective immunity. Minimizing the impact of disease challenges in an animal's life makes them less likely to spread disease, and can have an effect on growth, development and individual potential.

ButiPEARL™ Z EQ

ButiPEARL Z EQ uses the proprietary MicroPEARLS® spray freezing technology to provide two important nutrients, butyric acid and zinc. These two nutrients help maintain the horse's gastrointestinal tract (GIT) and improve gut function. ButiPEARL Z EQ's unique encapsulation technology allows for a timely release of the nutrients where they are needed, throughout the horse's upper and lower GIT.^{5,6}

CLOSTAT®

CLOSTAT contains a proprietary, patented strain of *Bacillus subtilis*, PB6. PB6 — a probiotic — is a unique, naturally-occurring microorganism. Kemin internal research has shown PB6 can inhibit *Clostridium perfringens*, as well as other commonly-occurring equine pathogens.⁷

ENDOX®

ENDOX was formulated specifically to protect finished feeds by safeguarding fat-soluble vitamins against degradation, protecting complete feeds from fat oxidation, vitamin loss and more.

KALLSIL™

KALLSIL reduces caking in feed by absorbing moisture. This results in improved flow in feed ingredients to prevent feed from hanging to the sides of the bins.

LYSOFORTE®

LYSOFORTE is a nutritional emulsifier designed to enhance digestion and absorption of energy-rich feed ingredients, including fats, oils and fat-soluble nutrients. Lysolecithins in LYSOFORTE help to reduce the energy required for fat digestion, thereby maximizing feed efficiency and providing better feed cost control.

Myco CURB®

Myco CURB is a mold inhibitor for feed, formulated to inhibit mold growth in processed feed ingredients, complete feed and total mixed rations (TMR). Myco CURB contains propionic acid blended with sorbic and benzoic acids and is buffered for improved equipment and employee safety.



Learn more at [Kemin.com/LeakyGut](https://www.kemin.com/LeakyGut)

5. Peng, L. et al. 2009. Butyrate Enhances the Intestinal Barrier by Facilitating Tight Junction assembly via Activation of AMP-Activated Protein Kinase in Caco-2 Cell Monolayers. *J. Nutr.* 139:1619-1625.
6. Ma, X. et al. 2012. Butyrate promotes the recovering of intestinal wound healing through its positive effect on the tight junctions. *J. Anim. Sci.* 90:266-268.
7. Burke, M. L., Moore, S. A. 2017. *Bacillus subtilis* Strain PB6 Demonstrates Growth Inhibition Toward Equine-Specific Bacterial Pathogens. *Journal of Equine Veterinary Science.* 58:84-88.



GUT HEALTH SOLUTIONS

A COMPREHENSIVE APPROACH TO GUT HEALTH

Help your horse reach its full potential. Establish the intestinal integrity and protection your horse needs using our Gut Health Triple Check.

Kemin offers a broad range of nutritional solutions for raising healthy animals. We understand your desire to improve the overall wellbeing and performance of your horse. Our products and services help you with nutrition, feed quality, gut health and pathogen control.

Kemin.com/LeakyGut

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