



Blue Pacific
MINERALS

CLEVER *by* NATURE



**IMPROVED
PROBIOTIC
FORMULA**



FixINE[®]

DIGESTIVE PROBIOTICS

PRODUCT OVERVIEW

FOR ULTIMATE HORSE HEALTH

ABOUT FIXINE® FOR EQUINE

Fixine® is used to maintain body condition and improved immune status among other positive outcomes.

Improved stability in warmer climates including *Bacillus Subtilis* and *Bacillus licheniformis* 2 strain with two different modes of action to protect and improve your horse health and gut performance.

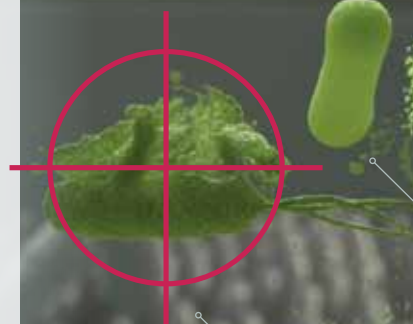
- Replaces and replenishes essential gut microbes, helping maintain overall animal health
- Natural toxin binder to help manage mycotoxins
- Aids in feed degradation, optimising feed digestibility
- Maintains a better gut environment to allow good micro-flora to reproduce, limiting adverse bacterial growth



HOW DO PROBIOTICS IMPROVE THE HEALTH & PERFORMANCE OF THE ANIMAL?

Probiotics are active cells that present different modes of action (MoA):

- Improve health & reduce morbidity
- Improve digestibility & performance
- Improvement of mucus layer intestine protection
- Competition for binding sites
- Supports intestinal barrier integrity
- Biofilm formation “coating”
- Immune modulation



PROBIOTIC + ANTI-BACTERIAL FACTORS
LICHENYSIN, SUBTILIN

CLOSTRIDIUM PERFRINGENS
DAMAGES CELL WALL

QUESTIONS TO ADDRESS

Why Bacillus-based probiotics matter in horses

Unlike many traditional probiotics that struggle to survive the acidic conditions of the stomach, Bacillus species are spore-forming bacteria, meaning they remain stable during feed processing and survive passage through the upper digestive tract. Once they reach the hindgut, the spores germinate and become metabolically active, helping to stabilise the gut microbiome and support digestive efficiency.

Probiotic supplementation has been shown to improve feed utilisation, reduce digestive disturbances, and support overall health and performance in horses.

For horses under training or dietary stress, maintaining this microbial balance is essential.



INVADING PATHOGENS MAY CAUSE INCREASED INTESTINAL PERMEABILITY

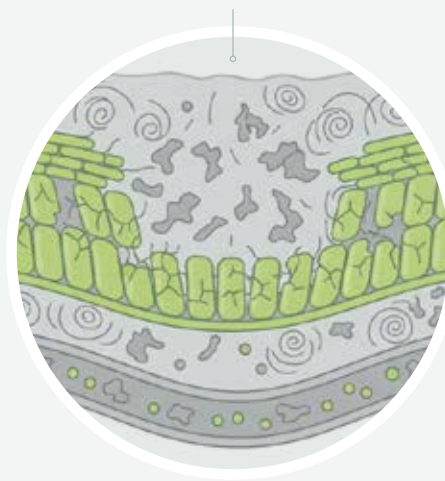
Leaky gut

Increased intestinal permeability allows entry of pathogens, undigested food proteins and foreign antigens to the underlying tissue and bloodstream of the host.

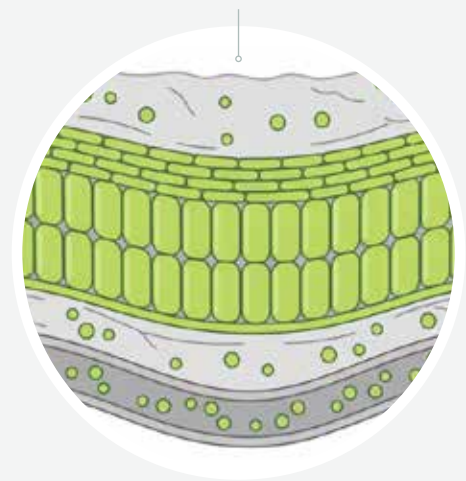
Probiotic effects

Probiotics have been shown to prevent or reverse increased permeability of the epithelial barrier.

LEAKY GUT
DYSBIOSIS -
DISRUPTED BALANCE



HEALTHY GUT
EUBIOSIS -
NORMAL BALANCE



STRENGTHENING THE GUT BARRIER

One of the most important emerging areas in equine nutrition is intestinal barrier integrity.

The gut lining is protected by a mucus layer and tight epithelial junctions that prevent toxins, pathogens, and inflammatory compounds from entering the bloodstream.

Research on *Bacillus* probiotics has demonstrated that strains such as *Bacillus licheniformis* can improve intestinal barrier function, increasing the expression of tight junction proteins and supporting mucosal immune responses.

These mechanisms are critical for managing the condition commonly referred to as “leaky gut”, where damage to the intestinal lining allows inflammatory molecules and endotoxins to cross into circulation. By promoting healthier epithelial cells and supporting mucosal immunity, *Bacillus* probiotics help maintain the integrity of the digestive barrier.



Probiotic potential of Bacillus isolated from horses and its therapeutic effect against DSS-induced colitis in mice - ScienceDirect

STABILITY TRIALS

Previous accelerated shelf-life stability trials of Fixine demonstrated variability in microbial populations, with actinomycete counts exceeding acceptable thresholds well before the target specification of 50,000 CFU/g. This variability raised concerns regarding product stability under elevated temperature and storage conditions.

In contrast, the reformulated product incorporating *Bacillus licheniformis* and *Bacillus subtilis* has demonstrated significantly improved stability. Empirical observations from in-house trials, including storage in sealed containers under elevated summer temperatures, showed no evidence of mold proliferation or microbial spoilage.

Manufacturer data further supports these findings, indicating that *Bacillus* spp. spores exhibit high thermal tolerance, maintaining viability at temperatures up to and exceeding 75°C. Additional studies conducted at temperatures above 100°C in formulated products have confirmed spore survival without subsequent promotion of mould growth or instability.

These results suggest that the transition to *Bacillus*-based microbial systems provides a more robust and thermally stable solution for maintaining product integrity under challenging storage and environmental conditions.

PATHOGEN CONTROL & IMMUNE MODULATION

Beyond structural gut support, *Bacillus subtilis* and *Bacillus licheniformis* also contribute to competitive exclusion of harmful bacteria. These probiotics can inhibit pathogen adhesion, reduce inflammatory responses, and produce antimicrobial compounds that suppress undesirable microbes.

For performance horses, this translates into:

- Improved digestive stability
- Reduced risk of microbial imbalance
- Better immune resilience during stress and travel
- Enhanced nutrient absorption and feed efficiency



RESULTS FOR ACCELERATED INCUBATOR TESTED

30day	Fixine® V2 Approximately 10 ⁵	Bacillus Licheniformis
30day		Bacillus Subtilis Actinomycetes <10
60day		Bacillus Licheniformis
60day		Bacillus Subtilis Actinomycetes <10

SUMMARY

HOW PROBIOTICS SUPPORT EQUINE GUT PERFORMANCE



REFERENCES

- M. Wang, D Deng, Z Yan, P Wang, M Iqbal, M Fakhar-e-Kulyar, D Zhu, H Lin, T Feng, Y Shen. Probiotic potential of *Bacillus* isolated from horses and its therapeutic effect against DSS-induced colitis in mice, Volume 1, Issue 1, March 2025, pp. 38-50, <https://doi.org/10.1016/j.azn.2024.09.001>
- S Borovkov, O Kolchik, A Paliy, V Borovkova, O Zlenko, O Pavichenko. The effect of probiotic complex of spore-forming bacteria *Bacillus* on the intestinal microbiome of normal and overweight horses, Volume 57 No.1 (2026), <https://doi.org/10.46419/cvj.57.1.8>



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