

SUMMARY

THE EVOLVING SCIENCE OF MARINE BIOACTIVES IN EQUINE NUTRITION

Re-thinking Equine Nutrition
Through the Lens of Gut Health



EXECUTIVE OVERVIEW

OceanFeed™ is a multi-seaweed nutrition platform developed to support gut health, fermentation stability, and functional resilience in horses. It combines complementary brown, green, and red marine macroalgae to act upstream on gastrointestinal ecology, rather than targeting isolated symptoms or outcomes.

In **horses**, gut health is central to energy metabolism, behaviour, immune balance, and tissue integrity. Because horses rely heavily on hindgut fermentation, even modest disruptions in microbial balance can manifest as changes in manure consistency, temperament, performance, and long-term soundness.

OceanFeed™ is designed to work with the horse's natural digestive physiology, supporting stable fermentation, epithelial integrity, and efficient nutrient utilisation across life stages and workloads.

WHY GUT HEALTH IS CENTRAL IN HORSES

Horses are hindgut fermenters that depend on microbial breakdown of fibre for a substantial proportion of their daily energy supply. This makes them particularly sensitive to changes in diet composition, feeding management, and stress.

Disruptions to hindgut fermentation are associated with acidosis, dysbiosis, inflammation, and behavioural changes, even in the absence of overt disease. Subclinical gut imbalance can impair performance, recovery, and tissue quality long before clinical signs are observed.

Supporting microbial stability and epithelial barrier function therefore represents a foundational strategy for maintaining equine health and resilience.



THE LIMITS OF SINGLE-SEAWEED SUPPLEMENTATION

Historically, seaweed use in equine nutrition has often focused on single brown seaweed species, typically kelps or *Ascophyllum nodosum*, valued for mineral content or general 'superfood' positioning.

- While brown seaweeds provide valuable bioactives such as fucoidans and polyphenols, they do not deliver the full range of fermentable substrates or physical fibre properties required to consistently support hindgut fermentation and manure quality.

Reliance on a single seaweed type can therefore limit both functional outcomes and safe inclusion rates, particularly where iodine exposure becomes a constraint.



WHAT DIFFERENT SEAWEEDS CONTRIBUTE

Marine macroalgae are diverse in composition and function. A multi-seaweed approach recognises and leverages this diversity.

- Brown seaweeds** contribute fucoidans, laminarins, alginates, and polyphenols that support immune modulation, epithelial integrity, and tissue resilience.
- Green seaweeds** provide highly fermentable rhamnase-rich polysaccharides that stimulate fibrolytic bacteria and short-chain fatty acid production.
- Red seaweeds** contribute sulphated galactans and gel-forming fibres that support hydration-stable digesta, manure consistency, and antioxidant balance. Combined, these seaweeds deliver system-level support for the equine hindgut.

PREDICTED AREAS OF NUTRITIONAL SUPPORT

Based on independent science and established equine physiology, a gut-centred, multi-seaweed approach is predicted to support:

- Stable hindgut fermentation and manure consistency
- Improved digestive tolerance during dietary or workload changes
- Behavioural calmness linked to gut comfort
- Tissue integrity, including skin and hoof horn quality
- Overall metabolic and performance resilience

These are predicted nutritional outcomes arising from improved gut ecology, not direct performance or therapeutic claims.

SAFETY, IODINE MANAGEMENT, AND INCLUSION FLEXIBILITY

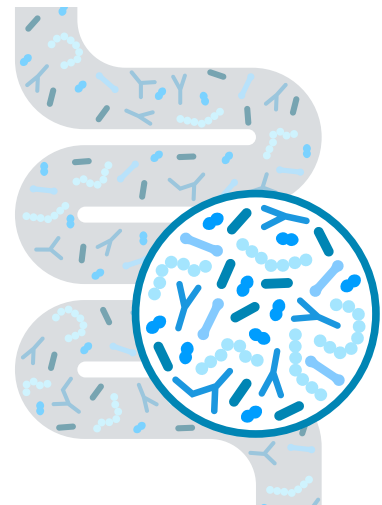
Iodine and trace mineral variability are important considerations in equine supplementation, particularly for horses in long-term feeding programmes.

A multi-seaweed blend distributes iodine across species with differing mineral profiles, allowing functional inclusion rates without excessive iodine exposure. This specification-led approach supports predictable formulation, regulatory compliance, and long-term feeding safety.

BEYOND NUTRITION: PRACTICAL AND MANAGEMENT BENEFITS

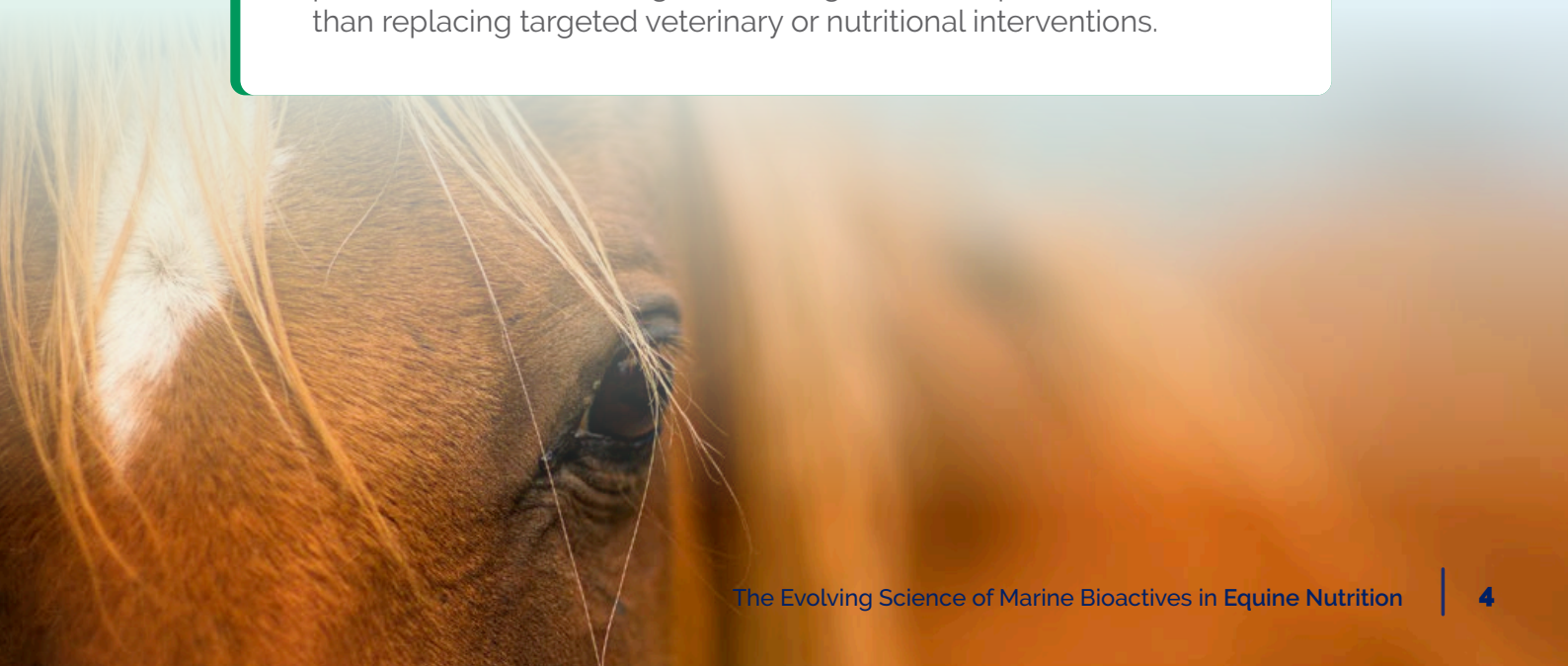
By supporting gut comfort and fermentation stability, gut-centred nutrition can reduce reliance on multiple single-purpose supplements and support more consistent outcomes across training, competition, and maintenance phases.

From a commercial perspective, **OceanFeed™** can be positioned as a foundational nutritional layer rather than a narrowly targeted additive.



POSITIONING OCEANFEED™ IN EQUINE FEEDING PROGRAMMES

OceanFeed™ should be positioned as a gut-health and resilience platform that works alongside existing ration components, rather than replacing targeted veterinary or nutritional interventions.



APPENDIX A: EQUINE-SPECIFIC SCIENTIFIC CONTEXT

Equine research demonstrates strong links between hindgut fermentation quality, microbial balance, behaviour, performance, and tissue integrity. Subclinical gut imbalance is a recognised contributor to behavioural issues and reduced resilience.

APPENDIX B: MARINE POLYSACCHARIDE MECHANISMS

Cross-species research shows that marine polysaccharides resist upper gastrointestinal digestion and are fermented in the hindgut. Fermentation products such as short-chain fatty acids support epithelial energy supply, barrier integrity, and gut–brain signalling.

APPENDIX C-F: CROSS-SPECIES MECHANISTIC CONTEXT AND PRACTICAL INTERPRETATION

The independent scientific literature underpinning **OceanFeed™** extends beyond species-specific feeding studies to include a broad body of cross-species research on **gut physiology, microbial fermentation, immune signalling, oxidative balance, and formulation safety**. These domains are treated separately in the full technical white papers but are summarised here to provide interpretive context for the mechanisms described in this document.



OXIDATIVE BALANCE AND TISSUE RESILIENCE

Across animal species, oxidative stress is recognised as a key factor influencing tissue integrity, immune balance, recovery, and long-term resilience. Marine macroalgae contain polyphenols and polysaccharides with documented antioxidant activity, which may contribute to reduced oxidative load when included as part of a balanced diet. In nutritional terms, these mechanisms support general resilience rather than targeting isolated performance or disease outcomes.



GUT-BRAIN AND GUT-IMMUNE SIGNALLING

Short-chain fatty acids produced during microbial fermentation act not only as energy substrates for intestinal epithelial cells but also as signalling molecules linking the gut to immune and neural pathways. Cross-species research demonstrates that stable fermentation and improved gut comfort are associated with calmer behaviour, improved stress tolerance, and more balanced immune responses. These relationships provide biological context for owner-visible outcomes without implying direct neurological or therapeutic effects.

SYNERGISTIC FUNCTION OF MULTI-SEAWEED FORMULATIONS

Different seaweed groups contribute structurally and functionally distinct polysaccharides and bioactives. Independent research shows that interactions between these compounds can enhance colonic delivery, microbial fermentation, and downstream biological activity compared with isolated ingredients. This supports the rationale for multi-seaweed formulations designed to act at the level of gut ecology rather than through single-compound effects.

FORMULATION SAFETY AND LONG-TERM FEEDING CONSIDERATIONS

The scientific literature also highlights the importance of mineral management, particularly iodine and trace elements, when incorporating seaweeds into animal diets. Blended, specification-led approaches allow functional inclusion while maintaining predictable nutrient exposure and regulatory compliance. This practical dimension underpins the long-term applicability of marine ingredients in commercial feeding programmes.

HOW TO INTERPRET THIS EVIDENCE

The mechanisms summarised in this appendix explain why gut-centred, multi-seaweed nutrition can support multiple aspects of animal wellbeing and product functionality.

They do not constitute disease, therapeutic, or guaranteed performance claims. Observed outcomes will vary with diet composition, inclusion rate, animal variability, management conditions, and feeding context.

For detailed citations and species-specific evidence, readers are referred to the full technical white paper.