

# A Functional Systems Approach to Companion Animal Health: Clinical Evaluation of Bill & Coo Nutritional Supplements

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**Christina Rahm\***

*DRC VENTURES LLC, USA*

**\*Corresponding Author:** Christina Rahm, DRC VENTURES LLC, USA.

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## Abstract

Bill and Coo formulations represent a systems-based approach to companion animal supplementation, designed to influence multiple physiological pathways rather than targeting isolated outcomes. These formulations are developed to support immune function, gastrointestinal balance, connective tissue integrity, and integumentary health through the use of bioavailable and synergistic ingredients. This integrated strategy reflects a shift toward functional nutrition, where supplementation is used to optimize biological systems at both the cellular and systemic level.

This paper evaluates the scientific foundation underlying each formulation within the Bill and Coo portfolio. Emphasis is placed on ingredient composition, mechanistic function, and clinical relevance within the context of modern veterinary nutrition. By examining how these formulations interact with key biological systems, this analysis highlights the role of targeted nutraceutical supplementation in supporting physiological resilience, maintaining homeostasis, and promoting long-term health outcomes in companion animals.

## Introduction

Bill and Coo supplements are designed to address the evolving demands of companion animal health by bridging the gap between baseline nutrition and functional optimization. While traditional pet diets provide essential nutrients required for survival, they may not fully account for variations in ingredient quality, processing degradation, or individual physiological needs. As a result, subclinical deficiencies and imbalances may persist, influencing immune function, metabolic performance, and overall vitality.

In response to these challenges, the Bill and Coo approach aligns with modern veterinary paradigms centered on preventative and integrative care. These formulations emphasize the use of bioavailable, synergistic nutrients that interact across multiple biological pathways. Rather than focusing on single-target interventions, this model supports a broader systems-based strategy, addressing immune modulation, gastrointestinal homeostasis, and structural integrity simultaneously. The growing body of research supporting nutraceutical interventions underscores their relevance in maintaining health, particularly in aging animals, those exposed to environmental stressors, or individuals with increased

physiological demands.

### ***Pure Clean Pets: Core Cellular Clean and Detoxification Support***

Pure Clean Pets is formulated to provide foundational cellular support through a combination of trace minerals, vitamin C, and orthosilicic acid. These components are selected for their roles in supporting enzymatic activity, oxidative balance, and structural integrity at the cellular level. Trace minerals function as essential cofactors in a wide range of metabolic processes, influencing immune responses, neurological signaling, and digestive efficiency. Their presence is critical for maintaining biochemical reactions that underpin overall physiological function (Bobeck, 2020).

Vitamin C contributes an additional layer of support through its antioxidant capacity, helping to neutralize reactive oxygen species and reduce oxidative stress. This function is particularly relevant in environments where animals are exposed to external stressors that may increase free radical production. In parallel, vitamin C plays a role in collagen synthesis and tissue repair, linking cellular protection with structural maintenance. Orthosilicic acid further complements this formulation by supporting connective tissue integrity, bone mineralization, and extracellular matrix stability. Its potential involvement in interactions with environmental compounds suggests a broader role in maintaining internal balance. Together, these ingredients form a comprehensive approach to supporting cellular function and systemic equilibrium.

### ***Best Lives: Connective Tissue and Circulatory Support***

Best Lives is designed to support both structural integrity and circulatory function through the combination of collagen peptides and beetroot-derived compounds. Collagen peptides provide a bioavailable source of amino acids essential for the maintenance and repair of connective tissues. Glycine and proline, in particular, play a central role in the synthesis of collagen, which is critical for maintaining the strength and elasticity of cartilage, tendons, ligaments, and skin.

As animals age or experience increased physical demand, natural collagen production may decline, leading to reduced mobility and structural resilience. Supplementation with collagen peptides supports the replenishment of these structural components while also promoting endogenous collagen synthesis. The inclusion of beetroot powder introduces a complementary mechanism through its role in nitric oxide production. Nitric oxide contributes to vasodilation, improving blood flow and supporting the efficient delivery of oxygen and nutrients to tissues (Perry et al., 2018). This dual-action approach supports both the structural framework and the functional performance of tissues, contributing to overall musculoskeletal health and circulatory efficiency.

### ***AniGreens: Gastrointestinal and Microbiome Optimization***

AniGreens is formulated to support gastrointestinal health through a targeted combination of prebiotic fibers and phytonutrient-rich greens. The gastrointestinal system plays a central role in overall health, influencing nutrient absorption, immune signaling, and metabolic regulation. Prebiotic fibers such as inulin, psyllium husk, and apple fiber serve as substrates for beneficial gut microorganisms, promoting microbial diversity and supporting digestive efficiency.

A balanced microbiome contributes to improved stool quality, enhanced nutrient assimilation, and strengthened intestinal barrier function. In addition to fiber-based support, AniGreens incorporates nutrient-dense plant ingredients such as spirulina and barley grass, which provide antioxidants, vitamins, and bioactive compounds that support metabolic processes and reduce oxidative stress (Ghatole et al., 2025). Greens including alfalfa, spinach, parsley, and aloe vera further contribute micronutrients and compounds that support digestive comfort and intestinal balance. This comprehensive formulation reflects a systems-based approach to gastrointestinal health, where microbial balance and nutrient density work together to support overall well-being.

### ***Defend Your Pet: Immune and Cellular Defense***

Defend Your Pet is formulated to enhance immune function and cellular performance through a combination of antioxidants, minerals, and metabolic cofactors. The inclusion of vitamin C and quercetin provides a synergistic approach to managing oxidative stress and regulating inflammatory pathways. These compounds support immune balance by modulating immune cell activity and reducing excessive inflammatory signaling, which can contribute to long-term physiological strain.

Additional components such as vitamin K2 and magnesium play important roles in metabolic regulation and structural health. Vitamin K2 supports proper mineral utilization, particularly in relation to bone and vascular health, while magnesium is involved in numerous enzymatic processes that influence energy production and cellular function. The inclusion of nicotinamide adenine dinucleotide (NAD+) further enhances this formulation by supporting mitochondrial energy metabolism and DNA repair mechanisms (Richards et al., 2025). As NAD+ levels are associated with cellular efficiency and resilience, its presence reinforces the formulation's focus on maintaining cellular integrity. Trace minerals complement these effects by supporting enzymatic activity and overall physiological balance, resulting in a multi-layered approach to immune and cellular defense.

### ***Coato: Topical Skin and Coat Support***

Coato is a topical formulation designed to support dermatological health and maintain the integrity of the skin and coat. The skin serves as a primary barrier against environmental stressors, making its resilience essential for overall health. Hypochlorous acid, a key component of this formulation, provides antimicrobial and anti-inflammatory support, helping to manage microbial exposure and maintain skin balance. Its compatibility with biological systems allows it to function effectively without disrupting the natural skin environment.

The inclusion of orthosilicic acid supports the structural components of the skin and coat, contributing to strength and resilience at the surface level. Aloe vera and niacinamide provide complementary benefits by soothing irritation, enhancing hydration, and reinforcing the skin barrier. These ingredients work together to support comfort and maintain the integrity of the skin underneath varying environmental conditions. Vitamin C further contributes through its role in collagen synthesis and antioxidant protection, linking topical care with underlying structural support (Almuraee, 2025). This integrated formulation reflects a comprehensive approach to maintaining skin health and coat quality.

### ***Cohesive Benefits Across the Product Line***

The Bill and Coo product line is designed as an interconnected system that addresses multiple physiological domains simultaneously. Each formulation contributes to a broader framework of support, where individual products complement one another to promote overall health. Gastrointestinal and microbiome balance is supported through targeted prebiotic and phytonutrient interventions, while immune function is reinforced through antioxidant and anti-inflammatory mechanisms.

Structural integrity is maintained through collagen and mineral support, which contribute to joint function, connective tissue strength, and overall mobility. At the same time, trace minerals and bioactive compounds support metabolic processes and cellular balance, contributing to efficient energy production and internal stability. This multi-system approach reflects an understanding that physiological processes are interconnected, and that effective supplementation must address these relationships rather than isolated functions. By integrating these pathways, the Bill and Coo system provides a cohesive strategy for supporting long-term health and resilience in companion animals.

## **Conclusion**

Bill and Coo formulations represent a scientifically grounded approach to companion animal supplementation, emphasizing multi-system support through carefully selected and synergistically combined ingredients. By targeting key physiological pathways, these products extend beyond traditional nutritional support to promote balance, resilience, and overall well-being. This approach

aligns with the growing emphasis on preventative care and integrative nutrition within veterinary science.

The coordinated design of these formulations highlights the importance of addressing health at both the systemic and cellular levels. Through the continued application of evidence-based nutraceutical strategies, there is potential to support improved long-term outcomes, enhance quality of life, and contribute to disease prevention in companion animals. As research in this field continues to evolve, systems-based supplementation is expected to play an increasingly central role in advancing companion animal health.

## References

1. Almuraee AA. "Nano-formulated herbal bioactives in animal-based functional foods: A nutritional approach to enhancing bio-availability and health benefits". *Applied Food Research* 6.1 (2025): 101587.
2. Block MS and Rowan BG. "Hypochlorous acid: a review". *Journal of Oral and Maxillofacial Surgery* 78.9 (2020): 1461-1466.
3. Bobeck EA. "Nutrition and Health: Companion Animal Applications: Functional nutrition in livestock and companion animals to modulate the immune response". *Journal of Animal Science* 98.3 (2020).
4. Freeman LM., et al. "Current knowledge about the risks and benefits of raw meat-based diets for dogs and cats". *Journal of the American Veterinary Medical Association* 243.11 (2013): 1549-1558.
5. Ghatole S, Gupta U and Kaity S. "Industrial manufacturing aspects of dietary supplements and nutraceuticals". In *Dietary Supplements and Nutraceuticals* (2025): 1-32.
6. Karkos PD., et al. "Spirulina in clinical practice: Evidence-Based Human Applications". *Evidence-based Complementary and Alternative Medicine* 2011.1 (2008): 531053.
7. Li Y., et al. "Quercetin, inflammation and immunity". *Nutrients* 8.3 (2016): 167.
8. Perry B, Robinson T and Grace D. "Review: Animal health and sustainable global livestock systems". *Animal* 12.8 (2018): 1699-1708.
9. Richards JD., et al. "Micronutrient bioavailability: concepts, influencing factors, and strategies for improvement". *Frontiers in Nutrition* 12 (2025): 1646750.
10. Rondanelli M., et al. "Silicon: A neglected micronutrient essential for bone health". *Experimental Biology and Medicine* 246.13 (2021): 1500-1511.