

Colostrum for Dogs and Cats: Revisiting Its Biological Roles, Therapeutic Claims and Evidence-Based Applications

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Abstract: Colostrum, the first secretion of the mammary gland following birth, is a bioactive and nutrient-dense fluid critical for neonatal survival. Rich in immunoglobulins, growth factors, and antimicrobial proteins, it facilitates passive immunity and supports intestinal maturation. While its role in new-born dogs and cats is well-established, colostrum is increasingly marketed as a nutraceutical for adult pets, with claims of immune enhancement, gastrointestinal support, and improved performance. This review examines colostrum's composition, its proven benefits in neonates, and the scientific validity of supplementation in adult companion animals. Evidence confirms its indispensable role in neonatal immunity but highlights minimal support for systemic effects in adults. Processing and storage can reduce biological activity, and controlled studies in adult dogs and cats remain sparse. Further research is needed to establish effective and safe supplementation strategies

Keywords: Colostrum, Passive Immunity, Companion Animals, Nutraceuticals, Immune Modulation

1. Introduction

Colostrum serves as a critical bridge between maternal and neonatal physiology, providing both nutrition and immunity. Unlike mature milk, it contains high concentrations of immunoglobulins, antimicrobial proteins, cytokines, and growth factors that collectively support early survival and development

In species such as dogs and cats, placental transfer of antibodies is negligible, making colostrum essential for initial immune protection. Recently, bovine colostrum supplements have gained popularity in adult pets, advertised as enhancing immunity, gastrointestinal health, and general well-being. These claims often rely on extrapolation from human or livestock studies and lack robust evidence in companion animals

This review consolidates current scientific understanding of colostrum in pets, evaluates neonatal versus adult applications, and addresses common misconceptions in the supplement industry

2. Composition and Biological Function of Colostrum

Colostrum is a complex secretion optimized for neonatal needs. Its major constituents include:

2.1 Immunoglobulins

IgG predominates in canine and feline colostrum, followed by IgA and IgM. These antibodies confer systemic and mucosal immunity, protecting against pathogens during the early weeks of life [1]. IgG levels are substantially higher than in mature milk, reflecting their critical function in passive immune transfer in new-born cats and dogs

2.2 Growth Factors

Insulin-like growth factors (IGF-1, IGF-2), epidermal growth factor (EGF), and transforming growth factor- β (TGF- β) stimulate intestinal epithelial proliferation, support tissue maturation, and promote immune tolerance [5]. These factors also enhance villus growth and enzymatic activity in the gut [4]

2.3 Antimicrobial and Regulatory Proteins

Lactoferrin sequesters iron to inhibit bacterial growth, while lysozyme and lactoperoxidase directly kill microbes. Cytokines, including IL-1 β , IL-6, and TNF- α , modulate early immune development in neonates [4]

2.4 Nutritional Components

Colostrum contains higher protein, fat, vitamins, and minerals than mature milk, providing immediate energy for thermoregulation, growth, and organ development [5]

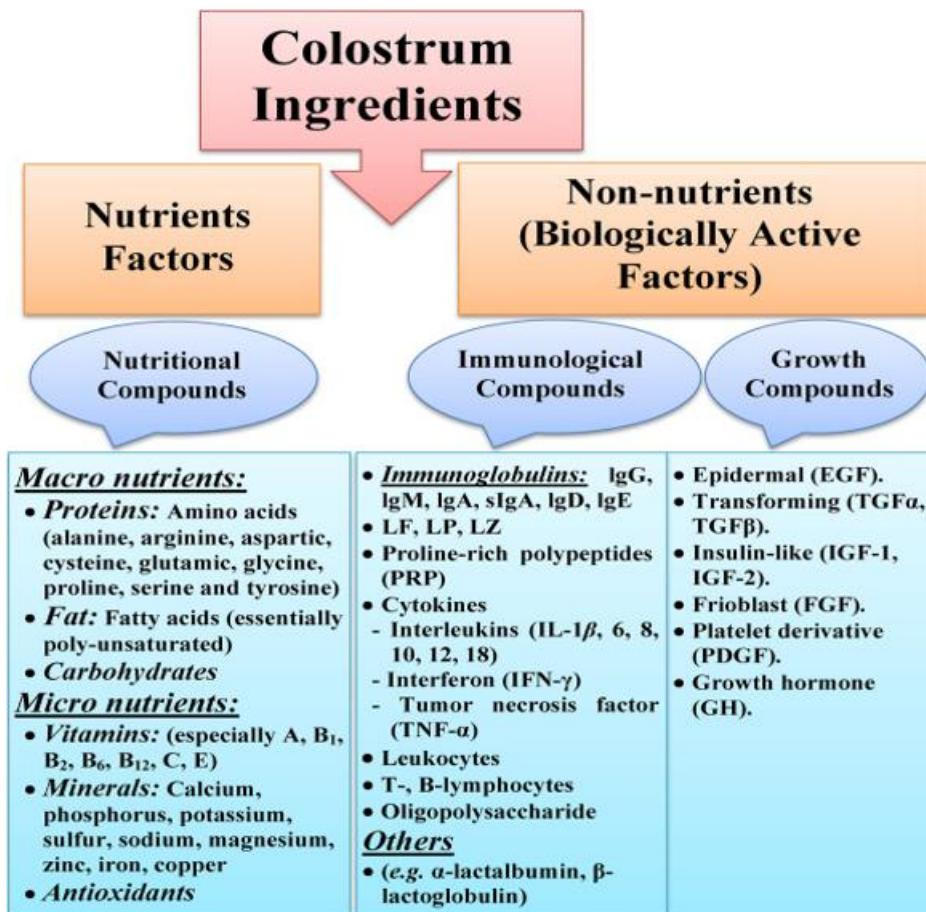


Figure 1: Generally Present Nutritional and Biologically Active Components in Mammalian Colostrum

3. Role of Colostrum in Neonates

3.1 Passive Immunity

Dogs and cats are born essentially without circulating antibodies due to endotheliochorial placentation. Neonates rely entirely on colostrum antibodies during the first 12–16 hours of life, before gut closure restricts absorption. Timely intake ensures adequate serum IgG levels and protection against infectious diseases

3.2 Failure of Passive Transfer

Insufficient colostrum intake results in failure of passive transfer (FPT), predisposing puppies and kittens to infections,

poor growth, and higher mortality. Studies indicate that neonatal survival correlates strongly with serum IgG levels at 24 hours post-birth

3.3 Additional Role

Colostrum promotes gut microbiota establishment and strengthens intestinal barrier integrity. Growth factors support villus development, enhance nutrient absorption, and reduce susceptibility to enteric pathogens

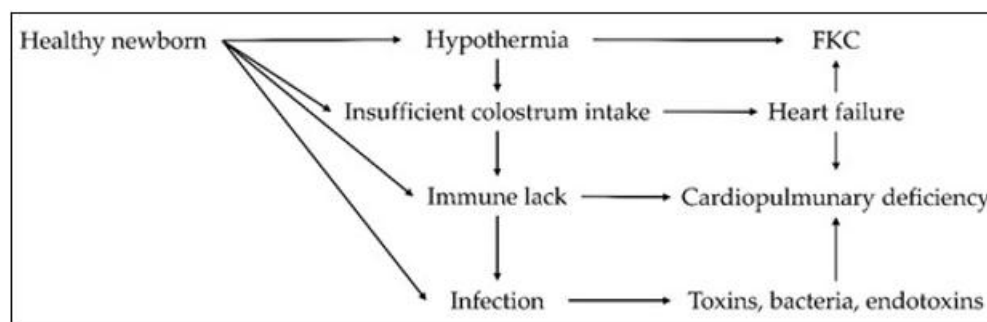


Figure 2: Causes and Interactions of Fading Kitten Complex (FKC) or Fading Puppy Complex (FPC)

4. Colostrum Replacers

Commercial colostrum replacers are used when maternal colostrum is unavailable. The efficacy of these products varies with immunoglobulin concentration, molecular integrity, and species compatibility. While replacers can improve neonatal outcomes, they may not fully replicate the immune benefits of maternal colostrum. Veterinary guidance and monitoring, including serum IgG measurements, enhance their effectiveness [2]

5. Colostrum Supplementation in Adult Dogs and Cats

5.1 Hypothesized Benefits

Adult supplementation of bovine colostrum is marketed for:

- Enhancing immune resilience
- Supporting gastrointestinal health
- Reducing inflammation
- Promoting recovery after stress or illness

5.2 Biological Plausibility

Some bioactive compounds, such as lactoferrin and growth factors, could theoretically act on gut mucosa or modulate local immunity. However, proteolytic digestion in adult dogs and cats limits systemic absorption of immunoglobulins, reducing the likelihood of whole-body immune effects

5.3 Evidence

- Canine studies are limited, with small sample sizes and inconsistent controls. Reported benefits include minor improvements in stool consistency or gut microbiota, but data are inconclusive
- Feline data are largely anecdotal
- Human studies indicate potential gut-protective effects, but interspecies differences prevent direct extrapolation to pets

Currently, there is no robust evidence to support systemic immune enhancement from colostrum supplementation in adult dogs or cats. Local immune modulation can be observed [3]



Figure 3: Typical Representation of Bovine Colostrum Powder

6. Myths and Misconceptions

Claim- “Bovine colostrum boosts systemic immunity in adult pets”

Truth- Oral immunoglobulins are largely digested. Systemic effects are unlikely

Claim- “It prevents allergies and infections”

Truth- No peer-reviewed veterinary studies confirm such effects

Claim- “Cross-species antibodies provide passive immunity”

Truth- IgG from cattle does not bind to canine/feline-specific pathogens

7. Quality and Safety Considerations

Key factors affecting supplement efficacy include:

- **Processing:** High heat and prolonged storage can denature immunoglobulins and growth factors
- **Sourcing:** Ethical and sustainable collection is critical
- **Contamination:** Poor handling may lead to bacterial or endotoxin exposure
- **Label accuracy:** Independent analyses often reveal discrepancies between declared and actual IgG content

8. Research Gaps and Future Directions

Despite theoretical benefits, significant knowledge gaps exist:

- Controlled clinical trials in adult dogs and cats assessing immune, gastrointestinal, and performance outcomes
- Standardized extraction and preservation methods to maintain bioactivity
- Dose response studies and long-term safety evaluations
- Exploration of colostrum-derived peptides or fractions to improve digestibility and efficacy

Addressing these gaps will clarify the realistic role of colostrum as a nutraceutical for companion animals

9. Conclusion

Colostrum is indispensable for neonatal health, providing passive immunity, promoting gut maturation, and supporting survival in the early postnatal period. Its supplementation in adult pets is largely theoretical, with minimal supporting evidence. While some local benefits can be expected, any systemic immune modulation is highly unlikely due to proteolytic digestion in adult dogs and cats. Marketing claims often exaggerate benefits not substantiated by research. Until controlled, species-specific studies are available, colostrum should be regarded as critical for neonates but optional for adult dogs and cats

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