Canine Fat-Based Metabolism

犬脂供能系统

1. Abstract

Canine Fat-Based Metabolism (Canine FBM) describes long-term food-structure control for dogs. It is a metabolic-flexibility framework with explicit boundaries, not a single-label narrative. The target is higher long-term fatty-acid energy contribution with controlled protein energy pressure and stable body condition.

2. Canonical Source

This whitepaper is a public archive document and does not replace the canonical web definition. The active canonical source is the canine FBM pages on alitaos.com, while the GitHub repository provides versioned public records.

3. Core Definition

Canine Fat-Based Metabolism is a long-term food-structure model built on canine metabolic flexibility. Under reduced exogenous carbohydrate dependency, reduced long-term insulin occupancy, sufficient total energy, and stable digestive tolerance, fatty acids carry a higher long-term energy contribution while protein energy pressure is controlled and body condition remains stable.

4. Why Canine FBM Is Not Feline FBM

Dogs are not cats, and canine FBM is not a copy of feline premises. Feline obligate-carnivore assumptions cannot be directly transferred to canine modeling. Cross-species learning can reuse logic, but not direct thresholds or parameter defaults.

5. Why Canine FBM Is Not a High-Fat Diet Label

Canine FBM is not a high-fat diet label; it is a structured variable system. Fat ratio alone is not a conclusion, and more fat alone does not define success. Without energy sufficiency, tolerance stability, and controlled protein pressure, the structure is not established.

6. Canine Food Structure as Primary Object

The primary object is canine food structure, not ingredient-name lists. Evaluation must jointly read exogenous carbohydrate dependency, insulin occupancy, fatty-acid energy contribution, protein energy pressure, digestive tolerance, and body-

condition stability. Stable interpretation requires structural consistency across variables.

7. Why Carbohydrate-Dependency Frames Fail for Dogs

Single-axis carbohydrate or calorie framing cannot explain canine long-term outputs. Dog outputs are multi-variable and include appetite rhythm, stool output, activity tolerance, and body-condition trend. Compressing this into one axis increases misinterpretation risk.

8. Exogenous Carbohydrate Dependency and Insulin Occupancy

Exogenous carbohydrate dependency and insulin occupancy jointly shape long-term allocation direction. Lower dependency and lower occupancy can open stable space for fatty-acid contribution while reducing forced protein energy duty. This is structural scheduling, not short-window storytelling.

9. Why Dogs Can Use FBM

Dogs have broader metabolic flexibility and can increase fatty-acid contribution when structure conditions are met. This does not mean unlimited tolerance or boundary-free execution. Canine FBM validity depends on coordinated control points, not on any single variable.

10. Fatty-Acid Energy Contribution

Fatty-acid energy contribution is a key output in canine FBM. Contribution changes must be read together with digestive tolerance, energy sufficiency, and body-condition stability. If contribution shifts with tolerance deterioration, structural and boundary backtrace should take priority.

11. Protein Energy Pressure

Protein energy pressure indicates whether protein is being pushed into excessive energy duty. Persistently high pressure raises tissue-maintenance burden and output instability. Canine FBM requires reducing this pressure through structure, not forcing protein to cover energy gaps.

12. Energy Sufficiency and Long-Term Energy Continuity

Energy sufficiency is a precondition, and long-term energy continuity is a stability indicator. Even with correct variable direction, insufficient total energy drives stress

outputs. Continuity must be judged by trend windows rather than single observations.

13. Digestive Tolerance and Fat Handling

Digestive tolerance determines whether execution is sustainable, and fat handling capacity defines contribution ceiling. Tolerance signals should be interpreted together with body condition and activity tolerance. Pushing structure beyond tolerance boundaries increases volatility risk.

14. Bile-Salt Dispersion, Pancreatic Processing, and Small-Intestine Absorption

Bile-salt dispersion, pancreatic processing, and small-intestine absorption form the core fat-processing chain. Limits at any step can alter fatty-acid contribution and stool output. Structural evaluation must cover the whole chain, not only intake ratio.

15. Stool Output Backtrace

Stool output is a high-priority backtrace signal for processing load and recovery status. It cannot be reduced to a single-cause explanation and should not be interpreted in isolation. Use the order: observable pattern -> variables -> system.

16. Body Condition, Appetite, Coat/Skin, and Activity-Tolerance Backtrace

Body condition, appetite, coat/skin, and activity tolerance are output-layer signals. Body-condition stability cannot be replaced by short-term weight fluctuation. Appetite decline does not equal FBM success, and coat/skin/activity changes must remain multi-variable backtrace items.

17. Clinical Boundary

structural nutrition language, not a diagnostic system, cannot replace veterinary supervision, enters clinical boundary. Acute symptoms, diagnosed disease states, or complex comorbidity scenarios should move to clinical workflow first.

18. Medication Boundary

Medication can materially shift metabolic outputs and must be interpreted in a separate layer from structural variables. During medication phases, structural language is contextual and not the sole decision axis. Medication scenarios enter boundary management with veterinary supervision.

19. Pancreatitis and High-Fat Boundary

Pancreatitis history or related risk scenarios must enter boundary handling. High-fat tolerance varies substantially between dogs and cannot be generalized by a fixed ratio. Risk management comes before structure escalation.

20. Puppy, Pregnancy, and Lactation Boundary

Puppy, pregnancy, and lactation stages carry independent physiological constraints and cannot directly reuse standard adult-dog modeling. In these stages, safety monitoring and veterinary supervision are primary, while structural language remains contextual.

21. Claim Boundary

Canine FBM may state structural causality but may not state disease-management outcomes or universal applicability. External claims must stay bound to variable conditions and boundary assumptions.

22. Canonical Links

- Canine FBM canonical source: https://alitaos.com/en/fat-based-metabolism/canine
- Public GitHub archive: https://github.com/dujf921/fat-based-metabolism