

Bioactive peptides specially for meat producing poultry | Gut health products focusing on bioactive peptides

—、Research Background

As a representative of new- quality productive forces, synthetic biology can leverage cutting- edge technologies such as molecular biology and bioinformatics to break through the functional bottlenecks of traditional microecological products and enzyme preparations, and achieve targeted quality improvement, cost reduction and loss mitigation in the breeding sector.

Current large- scale meat- poultry farming generally adopts high- density rearing, high- nutrient diets and fast- turnover models. The intestines of poultry are under long - term high - metabolic load, which can easily trigger problems such as intestinal mucosal damage, villus atrophy, intestinal microecological imbalance and digestive disorders. Factors such as farming stress, temperature fluctuations, feed change stress, and pathogen infection can further compromise the intestinal barrier, leading to industry-wide challenges—including feed-induced diarrhea, slowed growth rate, increased feed conversion ratio, elevated mortality rates, and poor market-ready uniformity—which severely hinder farming profitability.

The intestine is the core organ for nutrient absorption and immune defense in meat-producing poultry. Intact intestinal structure and stable intestinal function are fundamental to ensuring rapid growth, low consumption, low loss and high yield of meat- producing poultry. Therefore, promoting intestinal development, rapidly repairing intestinal damage, stabilizing the intestinal barrier, and improving digestive and absorption efficiency constitute the core breakthrough for cost reduction and efficiency improvement in meat- producing poultry farming.

Product Introduction: Bioactive peptides are animal- derived endogenous bioactive factors produced via synthetic biology technologies. They can precisely target the intestinal tracts of meat- producing poultry, promote the proliferation and differentiation of intestinal epithelial cells, accelerate intestinal development and maturation, rapidly repair damaged mucosa, strengthen the intestinal immune barrier, and enhance digestive enzyme activity and nutrient transport efficiency. They

address various intestinal disorders in meat- producing poultry at the source and truly realize "accelerated growth driven by intestinal health".

二、 Four Core Functions of the Product

1、 Promotes intestinal development and maturation, laying a solid foundation for healthy growth.

It effectively activates the metabolism, proliferation, and differentiation of intestinal epithelial cells, promotes rapid intestinal development in young poultry, increases villus height, expands the intestinal surface area, and optimizes the intestinal tissue structure, thereby addressing delayed intestinal development during the brooding period and laying a physiological foundation for efficient growth throughout the entire growth cycle.

2、 Quickly repair intestinal damage and stabilize the physical intestinal barrier

Quickly repair intestinal mucosal damage, villus shedding, intestinal bleeding and inflammatory injuries caused by stress, pathogenic bacteria, toxins and feed irritation, continuously maintain the integrity of intestinal structure, and reduce the recurrent occurrence of problems such as diarrhea, undigested feed in excrement and intestinal toxic syndrome.

3、 Strengthen intestinal mucosal immunity and reduce disease incidence and mortality

Enhances the local intestinal mucosal immune system, strengthens the intestinal resistance to infection, inhibits the colonization and proliferation of harmful bacteria, reduces the incidence of intestinal inflammation and secondary respiratory disorders, significantly improves the population's ability to withstand stress, and effectively lowers the overall mortality rate throughout the production cycle.

4、 Enhance digestion and absorption efficiency, and continuously optimize the feed-to-meat ratio.

Promotes the secretion of intestinal digestive enzymes, upregulates the expression of nutrient transporters, significantly enhances the absorption rates of core nutrients such as proteins, energy, and amino acids, reduces feed waste, addresses issues of poor weight gain upon feeding and uneven growth performance, and markedly increases market weight and uniformity.

三、 Empirical test data for large- scale meat- producing poultry (three groups of field trials)

Experiment 1: 19,200 yellow chicken breeding trial

Test subjects: 19,200 one- day- old Tu- er- huang chickens

Experimental grouping: 9,600 animals in the control group; 9,600 animals in the experimental group.

Test period: 80 days

Experimental design: Control group – basal diet; Experimental group – basal diet supplemented with 50 g/ton of bioactive peptides.

Surveillance project	Control group	Test group	Improvement magnitude
Initial herd size	9600	9600	—
Final herd size	8893	9261	+368
Survival rate (%)	92.64	96.47	+3.83%
Average daily feed intake (g)	106.88	111.63	+4.75g
Feed-to-meat ratio	3.00	2.88	-0.12
Intestinal length (cm)	172	185	+13cm

Test 2: Breeding Experiment of 3800 Meat Geese

Test subjects: 3,800 one- day- old meat geese

Experimental grouping: 1,900 animals in the control group; 1,900 animals in the experimental group.

Test duration: 63 days

Test protocol: The control group is fed basal diet; the experimental group is fed basal diet supplemented with bioactive peptides at 50 g per ton.

Surveillance project	Control group	Test group	Magnitude of improvement
Number of trial days (d)	63	63	—
Final herd size	1733	1777	+44
Initial weight (g)	95.00	95.00	
Survival rate (%)	91.21	93.53	+2.32%
Average daily gain (g)	63.17	66.35	+3.18
Average daily feed intake (g)	209.73	217.98	+3.25g
Feed-to-meat ratio	3.32	3.21	-0.11

Experiment 3: A breeding trial involving 24,000 AA white broiler chickens

Study subjects: 24,000 AA White Broiler Chickens (aged 1 day).

Experimental grouping: Control group (12,000 animals) and Experimental group (12,000 animals)

Test period: 40 days

Experimental design: Control group - basal diet;

Experimental group - basal diet supplemented with 50 g/ton of bioactive peptides.

Surveillance project	Control group	Test group	Magnitude of improvement
Final herd size	11544	11700	+156
survival rate (%)	96.2	97.5	+1.3
total weight (kg)	30533.88	31691.64	+1157.92
Average weight (g)	2645	2708	+63
Total feed intake (kg)	41362.72	41832.35	+469.63
Average feed intake (g)	3572	3575	基本持平
Feed-to-meat ratio	1.37	1.34	-0.03

四、Comprehensive Efficiency- Improving Indicators for Different Categories of Meat and Poultry

Animal husbandry species	Weight gain improvement	Increased survival rate	Feedconversion ratio optimization	Overall benefit
Large sized broilers	2%–3%	3%–5%	2%–3%	Market release 3–5 days in advance
meat goose	6%–8%	3%–5%	4%–6%	Fast growth

meat and poultry	8%–10%	3%–5%	4%–6%	Longer intestines, denser villi and uniform growth performance
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五、Product Usage Plan and Dosage

Applicable scene	Recommended dosage (g/ton of complete feed)	User Instructions
Whole Process of Meat- Poultry Rearing	50	Regulate intestinal health throughout the whole process for faster growth
Early fattening period	50	Promote rapid intestinal development, prevent white- scour and diarrhea
Accelerated growth in the middle- late stage	50	Enhance nutrient absorption and gain weight
Specialized Conditioning for Intestinal Issues	100	Quickly repair the intestinal mucosa and restore feed intake

六、Summary of Core Product Value

Different from traditional probiotics, prebiotics and intestinal anti- inflammatory products, bioactive peptides center on endogenous active peptides derived from synthetic biology. Instead of merely inhibiting bacteria or relying on exogenous microbiota, they address intestinal problems in meat- producing poultry from four fundamental dimensions: intestinal development, tissue repair, immunity enhancement and nutrient absorption.

It can deliver the following benefits throughout the whole breeding cycle: well-

developed intestinal tracts in young poultry, fast growth in the middle stage, low mortality and culling rate in the later stage, excellent feed- to- gain ratio all the way through, and high uniformity at slaughter. It is a standardized intestinal health-boosting product for cost reduction and efficiency improvement in large- scale breeding of meat- type chickens, ducks and geese.