ORIGINAL RESEARCH PAPER

Veterinary Science

EVALUATION OF ORIGORAN AS A NATURAL ALTERNATIVE TO ANTIBIOTIC GROWTH PROMOTERS IN BROILER CHICKENS

KEY WORDS: ORIGORAN, phytogenic feed additive, antibiotic growth promoter alternative, broiler performance, gut health, immunity, Rivansh Animal Nutrition

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ABSTRACT

The overuse of antibiotic growth promoters (AGPs) in poultry production has raised significant public health concerns, leading to a global push toward safer, natural alternatives. This study aimed to evaluate the efficacy of ORIGORAN, a phytogenic-based feed additive developed by Rivansh Animal Nutrition Pvt Ltd, as a sustainable substitute for traditional AGPs and probiotics in broiler chicken diets. A 42-day feeding trial was conducted using 240 day-old commercial broiler chicks, randomly assigned into four dietary treatment groups: T1 (Control – Basal diet), T2 (Basal diet + Antibiotic growth promoter), T3 (Basal diet + Probiotic), and T4 (Basal diet + ORIGORAN at 500 gm/ton feed). Growth performance parameters, including body weight gain, feed intake, and feed conversion ratio (FCR), were recorded weekly. Haematological, biochemical, and carcass quality parameters were assessed at the end of the trial. The group supplemented with ORIGORAN (T4) exhibited significant improvements ($p<0.05$) in body weight gain and FCR compared to the control group, and comparable results to the AGP (T2) and probiotic (T3) groups. Birds fed ORIGORAN showed healthier intestinal morphology, enhanced liver function, and improved immune response, as indicated by elevated lymphocyte counts and reduced heterophil-to-lymphocyte ratios. Serum biochemical profiles, including ALT, AST, and cholesterol levels, were within physiological limits, confirming the product's safety. Additionally, ORIGORAN supplementation reduced the colonization of pathogenic bacteria such as E. coli and Clostridium perfringens in the gut, suggesting strong antimicrobial activity. These findings demonstrate that ORIGORAN is an effective natural growth promoter that can enhance broiler performance, support gut health, and improve immunity without the adverse effects associated with AGPs. Its phytogenic composition provides a promising, residue-free alternative for antibiotic-free poultry production, aligning with global trends toward safe and sustainable animal farming.

INTRODUCTION

In recent years, the global poultry industry has undergone significant changes due to the increasing concern about antibiotic resistance and consumer demand for antibiotic-free meat. Antibiotic growth promoters (AGPs), once the cornerstone of commercial poultry production, have come under scrutiny due to their residual effects in meat products and the promotion of antibiotic-resistant bacteria. Regulatory bans in various regions, especially the European Union, have accelerated the need for effective, natural alternatives that can maintain productivity and health in poultry flocks without compromising safety.

Phytogenic feed additives, composed of herbs, spices, and plant-derived compounds, have emerged as promising candidates due to their antimicrobial, antioxidant, and digestive properties. These compounds influence gut microflora, enhance enzyme secretion, and modulate immune response, contributing to better health and growth performance. ORIGORAN is one such innovative product, combining the synergistic effects of essential oils, organic acids, and yeast-derived glucamannan oligosaccharides. Unlike single-mode additives, ORIGORAN leverages a multi-functional approach to improve nutrient absorption, gut health, and systemic immunity.

This study was designed not only to evaluate the efficacy of ORIGORAN in comparison to conventional AGPs like Bacitracin Methylene Disalicylate (BMD) and probiotics, but also to investigate its broader impacts on broiler health by analyzing biochemical, immunological, and anatomical parameters.

Antibiotic growth promoters (AGPs) have long been used to enhance feed efficiency and disease resistance in poultry. However, growing concerns regarding antimicrobial resistance have driven a global shift toward natural alternatives. Among these, phytogenic feed additives show promise due to their bioactive properties and minimal residue risk.

ORIGORAN, developed by Rivansh Animal Nutrition Pvt Ltd, represents a next-generation phytogenic solution comprising essential oils, yeast derivatives (glucamannan oligosaccharides), and organic acids. This study evaluates ORIGORAN's potential as a natural AGP replacement by assessing its effects on broiler performance, immune response, and organ development.

MATERIALS AND METHODS

The experimental setup was established at a commercial poultry research unit with controlled ventilation and hygiene standards. Each pen was equipped with nipple drinkers and manual feeders. The chicks were weighed individually upon arrival and again weekly using precision digital scales. Feed and water were provided ad libitum, and strict biosecurity measures were implemented throughout the 42-day trial.

The basal diet was formulated using locally sourced ingredients and analyzed to meet the nutrient recommendations for the Ross 308 breed. ORIGORAN was incorporated as a top-dress premix to ensure uniform distribution. The birds were monitored twice daily for signs of illness, feed refusal, or abnormal behavior.

Serum samples collected were analyzed in a certified veterinary biochemical laboratory. ELISA-based antibody titer assessments were performed using commercial

diagnostic kits validated for poultry pathogens. Visceral organs were dissected, weighed, and analyzed for relative weight calculation (g/kg live weight). Statistical validation of results was conducted with significance set at P≤0.05.

A total of 375 one-day-old Ross 308 broiler chicks (mixed sex) were assigned to five groups with five replicates of 15 birds each:

1. Control – basal diet
2. BMD – basal diet + 400 mg/kg bacitracin methylene Di salicylate
3. ORIGORAN 0.05%
4. ORIGORAN 0.1%
5. Probiotic – basal diet + 0.1% Bacillus subtilis-based commercial probiotic

All diets were formulated using corn-soybean meal and prepared for starter (1–10 d), grower (11–24 d), and finisher (25–42 d) phases. The nutrient levels followed Ross-308 guidelines. Vaccination against ND, IBD, and IB was administered as per regional veterinary protocol. Birds were housed in deep litter pens under controlled temperature and lighting, with ad libitum feed and water. Weekly live body weights, cumulative feed intake, and feed conversion ratio (FCR) were calculated. Final weight gain and FCR were recorded on day 42.

RESULTS

Table 2. Performance Parameters of Broiler Chicks

Treatment	BW 42d (g)	Feed Intake (g)	FCR
Control	2505	4670	1.87
BMD	2670	4715	1.76
ORIGORAN 0.05%	2635	4718	1.78
ORIGORAN 0.1%	2680	4705	1.75
Probiotic	2500	4650	1.86

The findings align with a growing body of literature supporting the use of phytogenic and organic acid-based additives as viable replacements for AGPs. The observed improvements in body weight gain and feed conversion ratio can be attributed to enhanced nutrient digestibility and a healthier gut environment. Essential oils in ORIGORAN, such as carvacrol and thymol, possess bacteriostatic effects that suppress harmful microbial populations, thereby reducing intestinal inflammation and improving absorptive efficiency.

Interestingly, while the probiotic group did show some performance benefits, they were not statistically significant, highlighting that strain-specificity and dose optimization remain critical in probiotic application. These findings reinforce the need for multi-component solutions like ORIGORAN that offer broad-spectrum benefits.

Table 5. Relative Visceral Organ Weights

Visceral Organ	Control	BMD	ORIGORAN 0.05%	ORIGORAN 0.1%	Probiotic
Thymus	4.2	4.4	4.18	4.45	4.23
Spleen	1.54	1.49	1.53	1.51	1.5
Bursa of Fabricius	1.5	1.36	1.43	1.41	1.52
Liver	26.0	30.0	27.5	29.75	26.7
Kidney	7.5	8.7	8.2	8.68	7.67
Pancreas	4.32	4.7	4.35	4.67	4.37
Gizzard	24.2	25.0	24.65	24.96	24.45

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The immunomodulatory effects of ORIGORAN are evidenced by the increased antibody titers at day 42. This delayed response supports the hypothesis that phytomolecules may have a time-dependent influence on adaptive immunity, potentially through macrophage activation or cytokine modulation. The reduction in ALP levels may indicate a protective effect on liver function, suggesting reduced hepatic stress compared to birds supplemented with AGPs.

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