Supplementation by a commercial prebiotic «AVIATOR®» of broiler diet: Effect of breeding stages on performances and caecal microflora

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INTRODUCTION

Soaring prices of red meat → Growing demand for white meat → Livestock intensification

Feed additives ← Feed Costs $
INTRODUCTION

Feed additives

Antibiotics

Prebiotics

Essential oil

Probiotics

Enzymes
INTRODUCTION

Definition

• Prebiotics are non-digestible but fermentable food ingredients that beneficially affect the host by selectively stimulating the growth and/or activity of one or a limited number of bacteria in the colon (Gibson and Roberfroid, 1995).

Interests of prebiotics in animal nutrition

• Improve zootechnical performance: weight gain, feed conversion.
• Increase population of lactic acid bacteria and decrease pathogenic bacteria.

The aim of this study was to evaluate the effect of prebiotic «AVIATOR®» (Arm & Hammer) derived from *Saccharomyces cerevisae* cell wall, as a potential substitute of antibiotics as growth promoter in poultry industry, during different breeding period.
Materials and Methods

One hundred and sixty male day-old chicks belonging to the “Arbor acres” strain were used in the described trials.

The chicks were individually identified, weighed and divided into three batches:

- The first group was considered as a control and received a normal diet (D0).
- The second group received D0 supplemented with the dose of 2g/kg of prebiotic for 42 days (P1).
- The third group was fed D0 with the dose of 2 g of prebiotic during only the two first weeks (P2).
Materials and Methods

The prebiotic used is marketed under the name « AVIATOR®» produced by the company "Arm and Hammer" of the group "Church & Dwight" (United States).

This supplement is based on yeast cultures and products of the enzymatic hydrolysis of the yeast wall: *Saccharomyces cerevisiae.*
Materials and Methods

**Growth performance:**

The animals were weighed individually each week at the same time, and the feed intake (FI) was determined. The daily weight gain (DWG) and the feed conversion ratio (FCR) were calculated per week.

A daily record was performed for mortalities.

**Study of caecal microflora:**

Caecas were collected on 14, 21 and 42nd day.

The enumeration of lactic acid bacteria, total coliforms and *Escherichia coli* was determined according to the culture description.
Results and discussion

- Over the growth period, BW was slightly higher with P1 compared to D0 and P2.
- The evolution of animal BW was not significantly affected by the administration of AVIATOR during the breeding starter period as well as during the grower finisher period.
Results and discussion

Effect on FCR

- No significant difference in FCR was recorded between groups during the starter period supplementation.

- FCR was significantly lower with P1 during the third week compared to others groups.

The effect of prebiotics would be conditioned to its presence.

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Results and discussion

Ceacal microbiome was significantly affected by the supplementation of AVIATOR in broiler diets, during the breeding starter period, as well as during the grower finisher period.

The effect of prebiotic persisted even when it was removed.

Once the intestinal epithelia was colonized by lactobacillus they can survive and continue to grow.

 Significant increase: caecal population lactobacillus P1, P2.
Results and discussion

MOS

Food source

+++ Beneficial bacteria:
Lactobacillus
Bifidobacteria

Competitive exclusion

Lactic acid production

Acidification of the intestinal environment

Inhibits attachment of pathogenic bacteria

Reduction of Enterobacteria

Improve gut health

(Source: Baurhoo et al., 2007
Patterson et al., 2003)
Conclusions

**Improve gut health**
Aviator protects against harmful pathogens such as *E. coli*.
It improves nutrient digestibility and helps birds maintain performance,

Good gut health allows for efficient nutrient absorption.

**Promote growth without antibiotics**
Aviator has shown consistent performance in broilers to improve feed conversion.
This means lower feed costs or increased weight gain in a shorter time.

Aviator can improve performance and reduce the cost of meat produced.

Our study showed that beneficial effects of prebiotics supplementation in poultry diet lead to a better protection of the animal against pathogens, when the prebiotic was added throughout the breeding period.
Thank You

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