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Flavo Combi®

Effect of Flavo Combi® *on digestibility, gut morphology and microflora in broilers*

Trial description

1 Set-up

- **Location:** China Agricultural University, China
- **Animals:**
  - male Arbor Acres broiler
  - 72 birds per treatment divided over 12 replicates
- **Feed:** Starter: 0-21 days, Grower: 22-42 days. Feed was mainly based on corn and soybean meal.

2 Treatments

- Control feed
- Control feed + 100 g Flavo Combi®/mton of feed (5 ppm of Flavomycin®/mton of feed + $1.35*10^{12}$ cfu Bacillus licheniformis/mton of feed)

3 Measured parameters

- Average daily gain and feed conversion were calculated at day 42.
- Digestibility of dry matter, crude protein, calcium and phosphorus were determined from day 40 till day 42 based on AOAC international methods.
- Intestinal morphology (villus height and crypt depth of duodenum, jejunum and ileum) of 12 birds per treatment was measured at day 42 based on Li *et al.* (1990).
- Cecal numbers of *Lactobacilli* and *E. coli* of 12 birds per treatment were determinded according to Mikkelsen *et al.* (2003).

References:

LI, D.F., Thaler, R.C., Nelssen, J.L., Harmon, D. L., Allee, G.L., Weeden, T. L., 1990. Effect of fat sources and combinations on starter pig performance, nutrient digestibility and intestinal morphology. Journal of Animal Science 68, 3694-3704.

Mikkelsen, L.L., Jakobsen, M., Jensen, B. B., 2003. Effects of dietary oligosaccharides on microbial diversity and fructo-oligo-saccharide degrading bacteria in feces of piglets post-weaning. Animal Feed Science and Technology 109, 133-150.

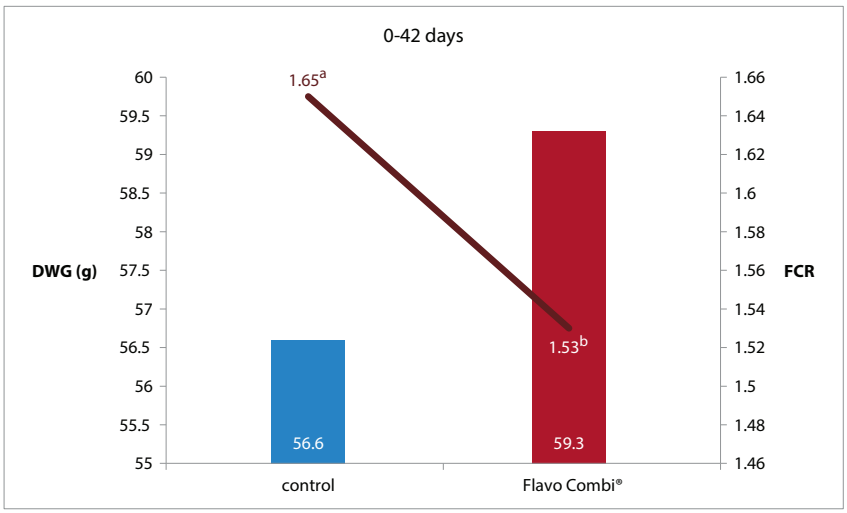
3

Results

Technical performance of broilers (Fig. 1)

Flavo Combi® significantly reduces feed conversion versus the control group.

Fig. 1



Different letters mean statistically different at $p < 0.05$.

Nutrient digestibility (Table 1)

Flavo Combi® significantly increases digestibility versus the control group.

Table 1

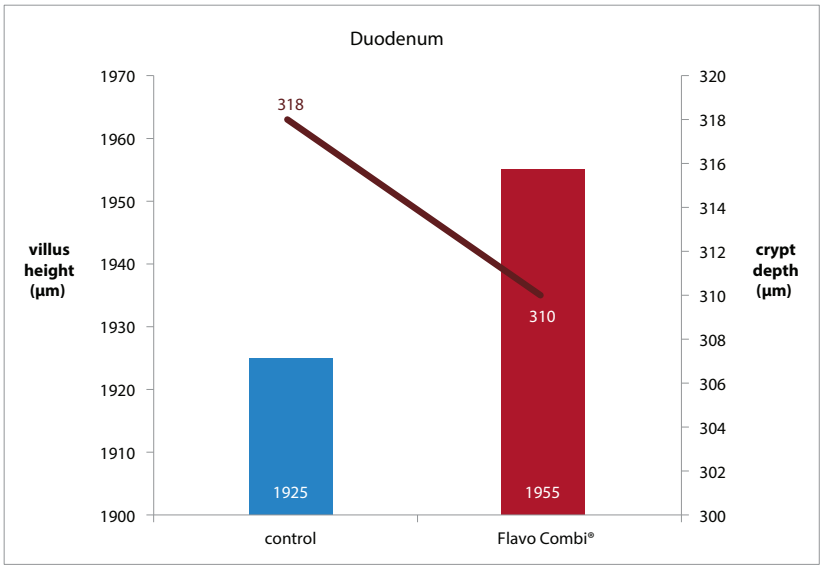
	Control	Flavo Combi®
Dry matter	0.70^a	0.77^b
Energy	0.76^a	0.81^b
Crude protein	0.50^a	0.66^b
Calcium	0.36^a	0.49^b
Phosporus	0.74^a	0.83^b

Different letters mean statistically different at $p < 0.05$.

Small intestinal morphology at day 42 (Fig. 2, 3 and 4)

Flavo Combi® significantly increases villus height, leading to an improved villus:crypt ratio versus the control group.

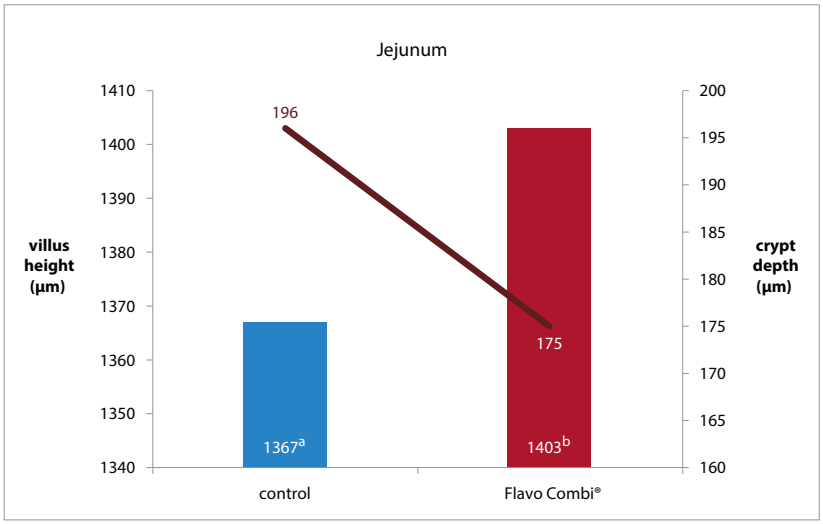
Fig. 2



Villus: Crypt ratio	6	6

Different letters mean statistically different at p < 0.05.

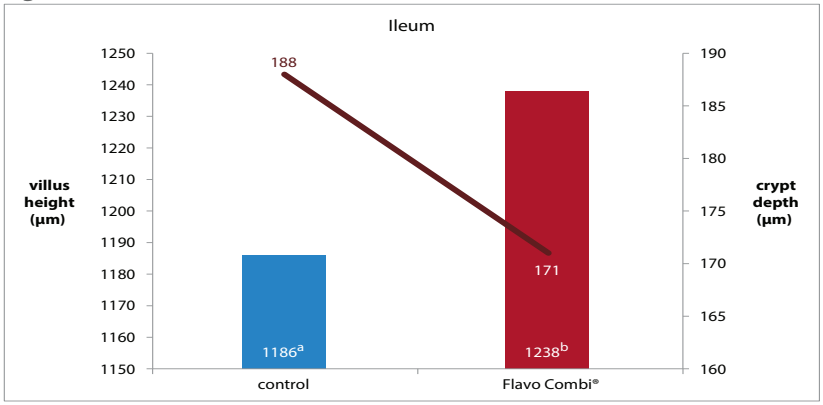
Fig. 3



Villus: Crypt ratio	7	8

Different letters mean statistically different at p < 0.05.

Fig. 4



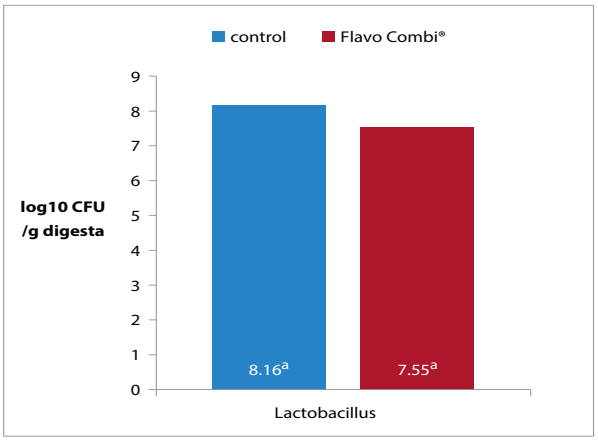
Villus: Crypt ratio	6	7

Different letters mean statistically different at p < 0.05.

Cecal microflora of broiler chickens at day 42 (Fig. 5 and Fig. 6)

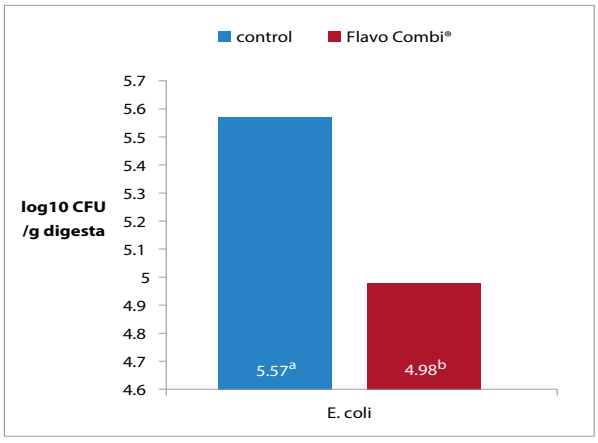
Flavo Combi® significantly decreases *E. coli* versus the control group. Beneficial *Lactobacilli* are not affected by supplementing Flavo Combi®.

Fig. 5



Different letters mean statistically different at p < 0.05.

Fig. 6



Different letters mean statistically different at p < 0.05.

Conclusion

Adding Flavo Combi® in broiler feed results in:

- 7% decrease in FCR
- 10% improved digestibility
- 3-4% longer villi
- 11% reduction in potential pathogenic *E. coli*