

EFFECT OF SOME FEED ADDITIVES ON PRODUCTIVE PERFORMANCE OF BROILERS

By

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SUMMARY AND CONCLUSIONS

In this study, two experiments were conducted to investigate the growth performance and meat quality of broilers as affected by dietary soybean lecithin and xylanase enzyme supplementation with energy levels. In the 1st experiment, two feed additives were used (soybean lecithin and xylanase enzyme), each was supplemented at three levels being 0, 0.5 and 1g / kg diet for crude soybean lecithin and 0, 0.1 and 0.2g / kg diet for xylanase enzyme. All these additives were added to two levels of energy (recommended and -100 kcal lower than recommendation). A total number of 384 unsexed day old Cobb500 broiler chicks were assigned into 12 treatments; each one contained four replicates of 8 chicks per replicate. Chicks were wing banded, individually weighed to the nearest 1 gram and then randomly distributed into 12 groups. Supplementation was offered to experimental diets during starter (1-10 days), grower (11-22 days) and finisher (23-35 days) periods. All these sources and levels were used either with the recommended level of metabolizable energy (3001, 3001 and 3100 Kcal / kg diet during starter, grower and finisher periods, respectively) or -100 Kcal / kg diet lower than energy recommendation (2901, 2901 and 3001 Kcal / kg diet during starter, grower and finisher periods, respectively).

The 2nd experiment was designed according to the result of experiment 1, by applying the best level of each additive as a single dose or in combination, with two dietary energy levels (recommended and -150 kcal lower than recommendation). A total number of 256 unsexed one day old Cobb-500 broiler chicks, obtained from the same hatchery used in the previous experiment, were divided into 8 treatments; each contained 4 replicates of eight chicks per replicate. The chicks were wing banded, individually weighed to the nearest 1 gram then randomly

distributed into 8 treatments. The best level of crude soy lecithin (0.5g / kg) and xylanase (0.2g / kg) were used as a single dose or in combination between them, with the recommended level of metabolizable energy (3001, 3001 and 3100 Kcal / kg diet during starter, grower and finisher periods, respectively). Or -150 Kcal / kg diet lower than energy recommendation being 2851, 2851 and 2951 Kcal / kg diet at starter, grower and finisher periods, respectively.

Experimental diets and water were offered ad-libitum all over the experimental periods. Chicks in all experimental treatments were kept under similar management, hygienic and environmental conditions. Birds of each experimental group were individually weighed to the nearest gram at the start of the experiment (one day) then weighted at a certain periods up to the end of the experimental period (35 days). Since, weight gain between two successive periods was individually calculated. Feed intake by all chicks was weekly recorded for each treatment. Feed conversion was then calculated as a ratio between feed intake (g) and weight gain (g). Mortality rate was estimated. At the end of the experimental period (35 days of bird's age), digestibility trials were carried out and a slaughter test was performed to determine carcass traits. Also, physical and chemical meat quality was performed. Some blood plasma parameters, asparatate aminotransferase (AST), alanine aminotransferase (ALT), total cholesterol, triglycerides, HDL and LDL were determined and economical efficiency was calculated.

Results obtained could be summarized as follows:

EXPERIMENT ONE

- 1- Chicks fed low energy diets recorded significantly higher live body weight (LBW), body weight gain (BWG), ether extract (EE) digestibility coefficient and the best FCR comparing to others fed recommended energy diets.

- 2- Birds fed low energy diets achieved significant lower plasma and meat triglycerides and thigh drip loss percent while, recorded higher lipase activity than birds fed recommended energy diets.
- 3- Broilers fed diets enriched with xylanase recorded significantly the highest LBW, BWG and the best FCR than birds fed diets supplied with lecithin.
- 4- Chicks fed diets supplemented with lecithin recorded significantly higher EE digestibility coefficient, plasma and meat HDL, lipase activity and improved hepatic antioxidant status comparing to those fed diets with xylanase.
- 5- Broiler chicks fed diets supplements with high level of additives (1.0g lecithin, 0.2g xylanase) recorded significantly higher BWG, EE digestibility coefficient and lipase activity while, recorded lower plasma and meat total cholesterol and hepatic MDA comparing to those fed zero and low level of additive.
- 6- Birds fed diets supplied with low level of additives (0.5g lecithin, 0.1g xylanase) recorded the best FCR compared to other levels of additives.
- 7- Broilers fed low energy diet + 0.2g xylanase recorded higher LBW and BWG while, recorded the least thigh and breast drip loss percent compared to other groups.
- 8- Broiler chicks fed low energy diet + 0.5g lecithin achieved the best FCR and the highest meat HDL comparing to other diets.
- 9- Birds fed low energy diets + 1.0g lecithin recorded significantly the highest EE digestibility coefficient, lipase activity, plasma HDL, catalase enzyme and economical efficiency comparing to the other tested groups.

EXPERIMENT TWO

- 1- Broilers fed low energy diet (-150Kcal) significantly increased EE digestibility coefficient, lipase activity , chemical meat quality and hepatic superoxide dismutase (SOD), and decrease in plasma triglycerides compared to those fed recommended energy diet.
- 2- Chicks fed recommended energy diet recorded the lowest thigh and breast drip loss percentage.
- 3- Broiler chicks fed diets supplied with 0.5g lecithin recorded significantly higher EE digestibility coefficient and lipase activity, moreover achieved lower meat LDL, thigh and breast drip loss percent. While, it recorded the best hepatic total antioxidant capacity enzyme activities (T-AOC) comparing to groups fed other additives.
- 4- Birds fed diets enriched with 0.5g lecithin + 0.2g xylanase recorded higher LBW and BWG compared to other diets with the rest of additives.
- 5- Broiler chicks fed low energy + 0.5g lecithin had significantly increased EE digestibility coefficient, lipase activity and total poly-unsaturated fatty acids while, decreased hepatic MDA value, thigh and breast drip loss percent compared to other groups.
- 6- Birds fed low energy + 0.5g lecithin + 0.2g xylanase recorded the best plasma HDL value and economical efficiency.