

NP1600 EFFECT ON CHANGE IN BIOCHEMICAL PARAMETERS IN BROILERS

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Article Received on
04 March 2018,

Revised on 24 March 2018,
Accepted on 14 April 2018

DOI: 10.20959/wjpps20185-11815

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SUMMARY

This study examines the effect of NP1600 on the variation in biochemical parameters (total cholesterol, triglycerides, urea, creatinine, total protein and uric acid) in broiler chickens. A total of 15 chickens was divided into 5 batches of 3 animals, four batches receiving NP1600 (80ppm, 120ppm, 150ppm, and 300ppm) and a control batch did not receive this product. The serum concentrations of the parameters studied were generally found to be high in the control group, but these concentrations were decreased in batches

supplemented with NP1600 in high doses (above 120 ppm). In conclusion, in broiler chickens, the addition of NP1600 to their diet has an impressive effect, especially on total cholesterol, triglycerides, creatinine, and uric acid. **Objective:** Study the effects of NP1600 on the variation of the following serum biochemical parameters: total cholesterol, triglycerides, creatinine, urea, total proteins 15 broilers were divided into five batches of three animals, four batches of treatment and one control batch; The addition of NP1600 (80ppm, 120ppm, 150ppm, and 300ppm) to the treated batches decreased the rate of biochemical parameters studied by increasing the doses of NP1600 and uric acid. **Methods and Results:** 15 broilers were divided into five batches of three animals, four batches of treatment and one control batch; The addition of NP1600 (80ppm, 120ppm, 150ppm, and 300ppm) to the treated batches decreased the rate of biochemical parameters studied by increasing the doses of NP1600. **Conclusion:** In broiler chickens, the addition of NP1600 to their diet had impressive effects on total cholesterol, triglycerides, creatinine and uric acid.

IMPORTANCE AND IMPACT OF THE STUDY

This work is a contribution to develop effective and natural components protecting broilers against certain pathologies.

KEYWORDS: biochemical parameters - broiler chickens -NP1600.

INTRODUCTION

The use of herbal supplements has become very popular as an alternative feeding strategy in poultry diets in recent years (Cabuk et al., 2014). After the European Union (EU) ban on the use of antibiotics in animal feed in 2006, essential oils, like other "natural" plant extracts, are undergoing significant development. Vegetable food additives consist of plant groups including herbs, spices and volatile oils (Mueller et al., 2012). Aromatic plant extracts are frequently used because of their anti-hypocholesterolemic and Anti-inflammatory effect (Lopez Bote et al., 1998, Craig 1999, Botsoglou et al., 2002, Labban et al., 2014) The effect of essential oils on poultry health yields dose-related yield (Williams and Rosa 2001) Currently, there have not been sufficient studies to evaluate the effects of essential oils on blood lipids and blood proteins in broiler chickens. Effects of NP1600 on changes in total cholesterol, triglycerides, creatinine, urea, total protein and uric acid levels in broiler chickens.

MATERIAL AND METHODS

Experience Animals

A total of 15 1-day flesh-type chickens were used in this experiment and randomly allocated to four treatment batches receiving NP1600 at doses of 80ppm, 120ppm, 150ppm, and 300ppm and a control group not receiving NP1600. The trial took place in one of the HAL poultry farms.

Blood parameters

Blood samples were taken during the time of slaughter in 10 ml glass dry tubes, the serum was separated by centrifugation and stored at -20 ° C until analysis, serum samples were collected Were analyzed for creatinine, urea, total cholesterol, triglycerides, total proteins and uric acid. All biochemical analyzes were performed with commercial kits (R.S. A biosystem).

Statistical analysis

The results of the values obtained for all the studied parameters were entered on Excel and analyzed with the software (SPSS.10.0 program). Values were expressed as mean \pm SD. The level of significance used in all tests was $p < 0.05$.

RESULTS

Means of total cholesterol, triglycerides, creatinine, urea, total protein and uric acid levels in the NP1600 treated batches and the control batch were shown in Table 1:

Table 1: Mean concentrations of the biochemical parameters tested in the batches treated with NP1600 and the control batch.

	total cholesterol g /l	triglycéride g /l	urea mg/l	Créatinine mg/l	total protein g/l	uric acid g/l
Témoin (0ppm)	1.11±0.11	0.29±0.10	0.05±0.006	4.21±0.20	35.96±3.71	62.1±1.86
Lot 1 (80ppm)	0.71±0.24	0.19±0.02	0.04±0.01	3.85±0.16	33.53±2.35	56.76±2.48
Lot 2 (120ppm)	0.67±0.13*	0.17±0.06	0.03±0.006	2.68±0.36**	31.75±0.63	54.65±0.50**
Lot 3 (150ppm)	0.64±0.10 *	0.10±0.04	0.03±0.006	2.60±0.07***	30.1±1.46	46.46±5.57*
Lot 4 (300ppm)	0.62±0.23*	0.06±0.02*	0.025±0.01	1.68±0.70***	30.56±2.17	42.35±1.30***

The values represent the mean \pm standard deviation. The comparison of the means between the treated batches and the untreated batch is carried out by the Student test according to the SPSS10 software and according to the following meanings:

* P <0.05: the difference is significant

** P <0.01: the difference is very significant

*** P <0.001: the difference is very highly significant.

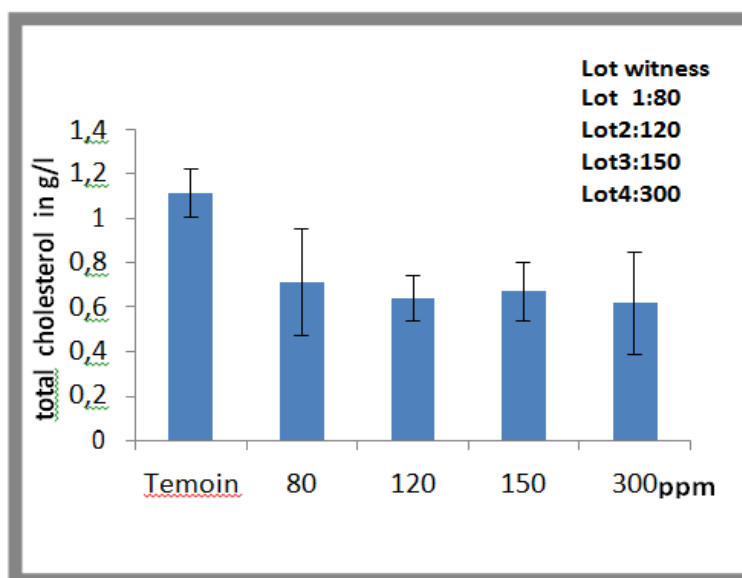


Fig. 1: Variation in cholesterol concentration Total as a function of NP1600.

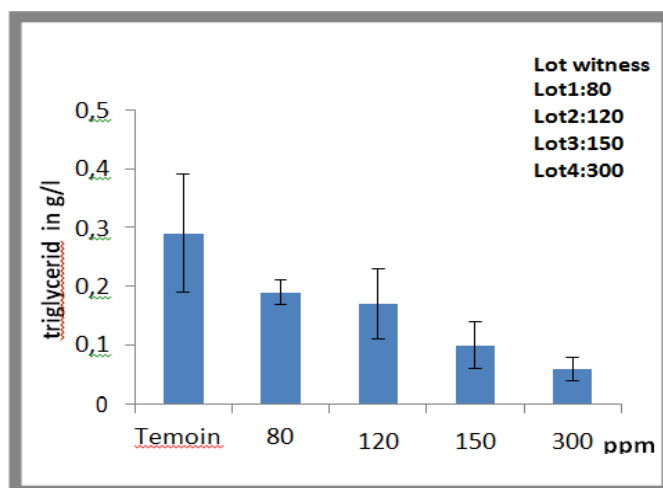


Fig. 2: Change in triglycerid concentration as a function of NP1600.

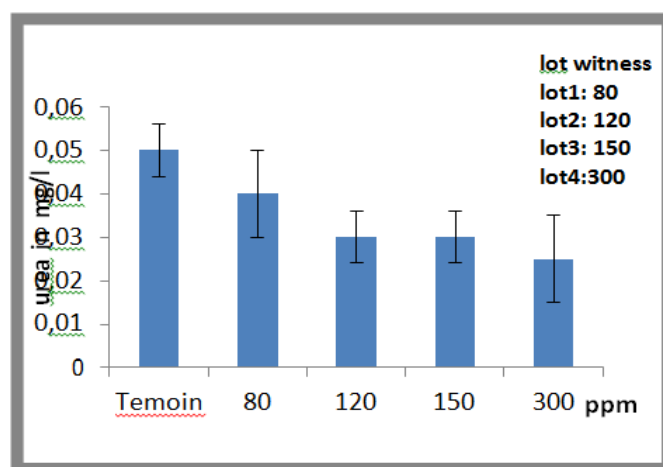


Fig. 3: Variation in the concentration of urea According to NP1600.

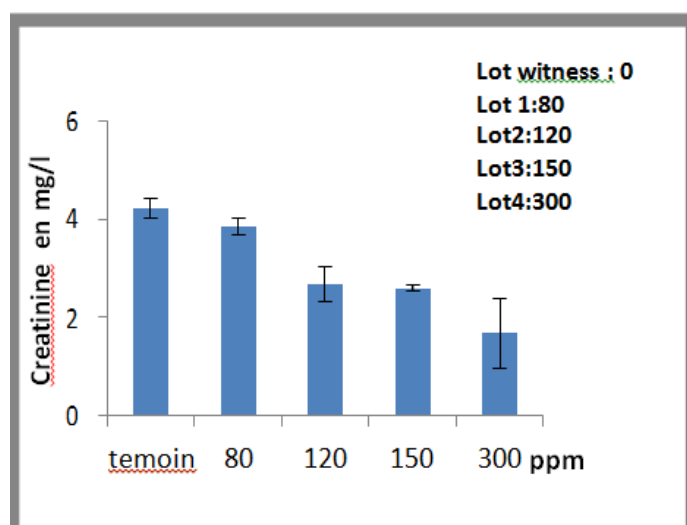


Fig 4: Variation in creatinine concentration as a function of NP1600.

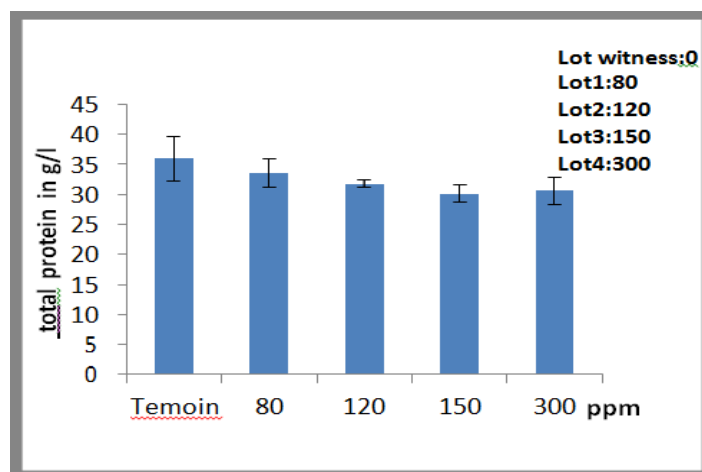


Fig. 5: Variation of total protein concentration as a function of NP1600.

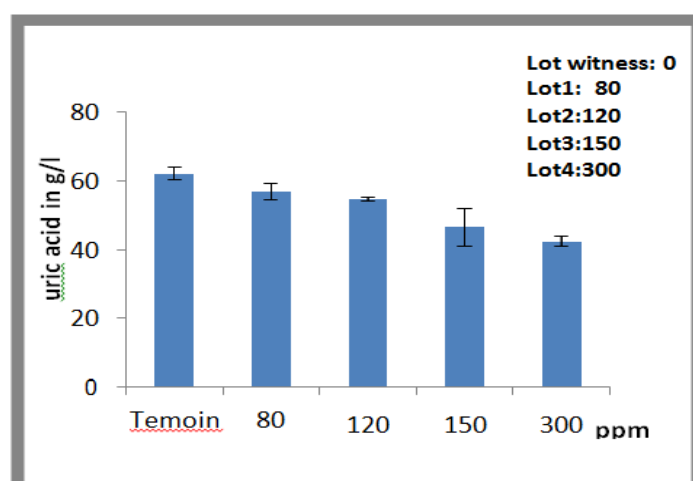


Fig. 6: Variation of the concentration of uric acid as a function of NP1600.

Means of total cholesterol, triglycerides, creatinine, urea, total protein and uric acid were studied in the NP1600 treated batches and in the control Graphs 1, 2, 3, 4, 5 and 6.

High concentrations of total cholesterol (1.11 ± 0.11) (Figure 1), triglycerides (0.29 ± 0.10) (Figure 2), urea (0.05 ± 0.006) (Figure 3) Creatinine (4.21 ± 0.20) (Figure 4), total proteins (35.96 ± 3.71) (Figure 5) and uric acid (62.1 ± 1.86) (Figure 6); These serum values of these biochemical parameters decrease by increasing the concentration of NP1600. For total cholesterol (Figure 1), there was a significant difference between the control batch and batches 120, 150, and 300 ppm for triglycerides (Figure 2), the difference was only significant in the batch 300ppm. A very significant difference is observed in batch 120ppm for creatinine (Figure 4), and uric acid (Figure 6), and this difference becomes very highly significant above 120ppm for creatinine (Figure 4), and In excess of

300 ppm for uric acid (Figure 6). However, there was no significant difference between the control and the treated batches for urea and total proteins (see table above).

DISCUSSION

In our study, serum concentrations of total cholesterol and triglycerides were higher in the control than in the NP1600 supplemented batches. Thus the addition of NP1600 to the feed decreased the rate of these two biochemical parameters. Mona et al (2010); Amera et al. (2013); Akiba and Matsumoto (1982) and Ashan (2012) have shown that some essential oils have a good effect on the decrease in total cholesterol and triglycerides in the blood of broilers; In addition Ghazalah et al (2008); Manafi et al. (2014) reported that the addition of certain essential oils only has a cholesterol-lowering effect.

The results of the present study are also similar to some studies (Ali et al., 2007, Radwan et al., 2008, Khosravinia 2014) who reported that the addition of thyme oil to broiler chicken diets decreased Levels of triglycerides and total serum cholesterol.

The significant results obtained when comparing the batches treated with NP1600 and the control batch; And the variation in total cholesterol and triglycerides suggests that the addition of NP1600 especially at high doses (300ppm) has a beneficial effect in protecting the vessels against hyperlipidemia (fat deposition) problems.

The serum concentrations of urea and creatinine were higher in the control group than in the NP1600 supplemented batches. Thus the addition of NP1600 decreased the level of these two biochemical parameters; By comparison of the control batch and the treated batches above 120 ppm; A very highly significant difference was observed for creatinine; This variation suggests that the addition of NP1600 to the broiler feed has a good effect on the creatinine decrease and thus to prevent the kidney from kidney failure. Knowing that creatinine is a good marker of renal function; Its realization is carried out routinely by the veterinarians, in particular in the context of the diagnosis, prognosis and follow-up of renal insufficiency, it is used for its exploration without prejudging its origin and its more or less chronic character. In renal insufficiency; The two renal parameters (creatinine and urea) increase in parallel in a staggered manner, the increase in urea being earlier (Grégory, Daniel, Eric Casseleux, 2007) The isolated increase in urea is due to decreased renal perfusion and is often the result of hypovolemia. (Grégory, Daniel, Eric Casseleux, 2007). Comparison of values of mean concentrations between triglycerides and renal balance revealed a very highly significant

difference ($p < 0.001$), thus hypertriglyceridemia increased creatinine and urea levels. Quaschnig *et al.* (2001); Mekki *et al.* reported that, hypertriglyceridemia is a common abnormality during chronic renal failure.

For uric acid, the serum concentrations in the control batch were higher compared to the batches treated with NP1600; There is a significant difference above 120ppm and a very highly significant difference above 300ppm, the significant results suggest that the addition of NP1600 to broiler feed, especially at the high dose 300ppm, has a good Effect on the variation of this biochemical parameter.

For the total proteins, the serum concentrations obtained were higher in the control group compared to those of the batches treated with NP1600.

Comparison of the values of mean concentrations between total proteins and uric acid on the one hand and between uric acid and renal balance on the other reveals a very highly significant difference $P < 0.001$ According to Leisbouyries, 1965; Proteins always increase blood uric acid also renal inflammation is often an occasional cause necessary.

CONCLUSION

The aim of this study was to evaluate the effect of NP1600 on variation in biochemical parameters in broiler chickens.

The mean values of the concentrations of the biochemical parameters of the treated batches compared to the values obtained in the control batch are different. Comparison of these values according to different doses of NP1600 made it possible to demonstrate the significant effect of NP1600 on the variation of certain biochemical parameters in broiler chickens.

Biochemical changes mainly concern creatinine, urea, cholesterol, triglyceride, total protein and uric acid.

Our biochemical results are in general consistent with the literature and provide a number of useful indications for the practitioner in current practice.

Indeed, knowledge of the effect of NP1600 on the variation of biochemical parameters in broiler chickens is very important for the interpretation and follow-up of pathological cases which possesses many interesting potentialities to exploit.

BIBIOLGRAFIC REFERENCE

1. Akiba Y, and Matsumoto T Effects of dietary fibers on lipid metabolism in liver and adipose tissue in chicks. *Journal of Nutrition*, 1982; 112: 1577-1585.
2. Ali MN, Hassan MS, and Abdel-Ghany FA Effect of strain, type of natural antioxidant and sulphate on productive, physiological and hatching performance of native laying hens. *International Journal of Poultry Science*, 2007; 6: 539-554.
3. Amera S. Abd El-Latif, Nahed S. Saleh, Tamer S. Allam and Emad W. Ghazy The Effects of Rosemary (*Rosemarinus afficinalis*) and Garlic (*Allium sativum*) Essential Oils on Performance, Hematological, Biochemical and Immunological parameters of Broiler Chickens. *British Journal of Poultry Sciences*, 2013; 2(2): 16-24, 2013.
4. Ashan SK Influence of two herbal extracts on performance, carcass quality and blood parameters in broiler chicken. *Annals of Biological Research*, 2012; 2(5): 584- 588.
5. Botsoglou NA, Florou-Paneri P, Christaki E, Fletouris DJ, and Spais AB Effect of dietary oregano essential oil on performance of chickens and on iron-induced lipid oxidation of breast, thigh and abdominal fat tissues. *British Poultry Science*, 2002; 43: 223–230.
6. Cabuk M, Eratak S, Alcicek A, and Bozkurt M Effects of Herbal Essential Oil Mixture as a Dietary Supplement on Egg Production in Quail Hindawi Publishing Corporation. *The Scientific World Journal*, 2014; 3.
7. Craig WJ Health-promoting properties of common herbs. *Am. J. Clin. Nutr.*, 70:491-499. Ghazalah AA, and Ali AM (2008). Rosemary leaves as a dietary supplement for growth in broiler chickens. *International Journal of Poultry Science*, 1999; 7: 234-239.
8. Grégory, Daniel, Eric Casseleux, Determination des valeurs usuelles biochimiques et hematologiques du chiot age de zero a huit semaines, 2007.
9. Khosravinia H Hypolipidemic effects of Satureja khuzistanica essential oil in Broiler Chicken are realized through Alteration inSteroid Hormones. *Kafkas Univ Vet Fak. Derg*, DOI: 10.9775/kvfd.2014.12020., 2014.
10. Lesbouyries. G, *Pathologies des oiseaux de basse cour. La neurolymphomatose*, Edition: Vigot frères, 1965; 363-372.
11. Lopez-Bote LJ, Gray JI, Gomaa EA, Flegel CI Effect of dietary administration of oil extracts from rosemary and sage on lipid oxidation in broiler meat. *Br. Poult. Sci.*, 1998; 39: 235-240.
12. Manafi M, Hedayati M, Yari M Application of rosemary (*Rosmarinus officinalis* L.)

- essence on chicks fed aflatoxin B1: Impacts on internal organ weights, biochemical traits and mortality. *Research in Zoolog*, 2014; 4(1): 13-19.
13. Mekki K, Bouchenzk M, Remaou M, Belleville J. Effect of long term hemodialysis on plasma lecithin: cholesterol acyltransferase activity, HDL2, HDL3 amount and composition in patients with chronic renal failure, treated by hemodialysis: a 9 years longitudinal study. *Medical science. Monitor.*, 2004; 10(8): 439-446.
 14. Mona, O., H.M. Yakout, H.F. Motawe and W.F. Ezz two herbs appeared to have immunomodulatory effects El-Arab, Productive, physiological, immunological and economical effects of supplementing natural feed additives to broiler diets. *Egypt. Poult. Sci.*, 2010; 30: 25-53.
 15. Mueller K, Blum NM, Kluge H, Mueller AS Influence of broccoli extract and various essential oils on performance and expression of xenobiotic- and antioxidant enzymes in broiler chickens. *British Journal of Nutrition*, 2012; 108: 588-602.
 16. Quaschnig T, Krane V, Metzger T, Wanner C. Abnormalities in uremic lipoprotein metabolism and its impact on cardiovascular disease. *Am J kidney Dis.*, 2001; 38(4): 14-9.
 17. Radwan NL, Hassan, RA, Qota EM, Fayek HM Effect of natural antioxidant on oxidative stability of eggs and productive and reproductive performance of laying hens. *International Journal of Poultry Science*, 2008; 7: 134-150.
 18. Williams P, Rosa R The use of essential oil and their compounds in poultry nutrition. *World Poult.*, 2001; 17(4): 14-15.