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IMPACT OF FEEDS CONTAINING OPTIFEED®, VÊO® PREMIUM, AND OLEOBIOTEC® ON THE LIPID PEROXIDATION OF MALE BROILERS UNDER HEAT STRESS

F. I. Al-Bazy[1], S. M. Abdulateef[2]* and B. F. Sulaiman[3]

[1] Ministry of Agriculture, Office of Agricultural Researches, Iraq.
[2] Department of Animal Production, College of Agriculture, University of Anbar, Anbar, Iraq.
[3] Department of Animal Production, College of Agricultural Engineering Sciences, Salah Al-Din University, Iraq.
* **Corresponding author:** Salwan M. Abdulateef, College of Agriculture, University of Anbar, Anbar, Iraq. Email: ag.salwan.mahmood@uoanbar.edu.iq

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Abstract: The present study was conducted to investigate the effect of adding various levels of Optifeed®, VêO® premium and Oleobiotec® to the diets as appetite stimulants in the production Performance of broiler males under heat stress conditions. The experiment was done for 42 days for the period from 30 August 2018 to 11 of October 2018 at the Poultry Research Station of the Livestock Research Department / Agricultural Research Department / Ministry of Agriculture (Baghdad - Abu Ghraib). In this study, 270 - one-day broiler males (Ross 308) were reared with a mean body weight of 37 g/chick, distributed randomly on 18 pens with dimensions of 2 x 3 m (length x width). The experimental treatments involved six treatments with three replicates for each treatment (per replicate 15 chicks). The treatments were included T1: basal diet as a control with no additions, T2: basal diet + 500 g/ton of Optifeed®, T3: basal diet + 250 g/ton of VêO® premium, T4: basal diet + 250 g/ton of Oleobiotec®, T5: basal diet + 250 g of Optifeed® + 125 g of VêO® premium + 125 g of oleobiotec® /ton of feed, T6: basal diet + 500 g Optifeed® + 250 g VêO® premium + 250 g Oleobiotec® g/ton of feed. The obtained results showed that a significant decrease in all experimental trials of Malondialdehyde (MDA) for broiler liver tissue compared to control treatment. Treatment (T6) recorded the lowest concentration of dehydrode (MDA) compared to other treatments.

Keywords: Optifeed®, Vêo® Premium, Oleobiotec ®, lipid Peroxidation, broiler, heat stress.

1. Introduction

One of the main problems caused by the high temperature of the broiler environment is reduced feed intake. This leads to a lack of essential nutrients. Consequently, this weakens the growth and low productivity of the broiler. Stress also causes poor immunity. Continuous stress may lead to loss [1]. High temperatures can also increase the bird's breathing rate, causing large amounts of oxy-gen to enter, which may generate free radicals that cause oxidative damage to cells through the occurrence of lipid peroxidation and thus oxidative damage to protein and DNA [2].

Systems Refrigeration in the fields of poultry raising to reduce the high temperatures during the summer lead to an increase in the cost of production and the use of antibiotics, medicines, sedatives, sedatives and antifreeze was found through many studies that have a negative impact on consumer health as it accumulates in poultry products and high prices [3]. Three products or feed additives have been recently produced these Optifeed® consists of a mixture of plant extracts of thyme,

licorice, gum arabic, turmeric, cinnamon, peppers, alkaloids and soaps, as well as vitamin E and natural flavoring agents [4]. VêO®premium consists of orange, lemon, salicylic acid, vitamin E and natural flavoring products. The third product is Oleobiotec®, which consists of three essential oils: marjoram oil, thyme oil, cinnamon oil, and three spices of ginger, turmeric, and pepper, as well as BHT as an antioxidant [5]. The purpose of these products is to stimulate appetite to increase feed consumption by birds, Enhancing immunity and antioxidants these additives are based on their ability to stimulate the center of appetite in the brain through the axes of smell and taste and inhibit the center of stress because it has a distinctive smell and taste [6]. This study aimed to evaluate the effect of adding different levels of Optifeed®, VêO® premium and Oleobiotec® to the diets as appetite stimulants on the production performance of broiler males under heat stress conditions [7].

2. Materials and Methods

The study was carried out at the Poultry Research Station of the Livestock Research Department / Agricultural Research Department / Ministry of Agriculture (Baghdad - Abu Ghraib). The trial period was 42 days for the period from 30 August 2018 to 11 October 2018., 270 -one-day broiler males (Ross 308) were reared with a mean body weight of 37 g/chick. The experimental experiments included 6 treatments each treatment 3 replicates, 15 birds per replicate distributed randomly to the replicates. The broiler was raised in a semi-enclosed hall where the hall was divided into 18 Pen dimensions (2 × 3 m length x width).

The heating system was based on the natural heat provided for the length of the trial period, which was at a rate of (35 ± 2) C during the experiment period without using incubators or desert cooling. The temperature and humidity were recorded every 4 hours (10 am, 2 pm, 6 pm, and 10 pm) of each day. The temperature and humidity recorded by the 4 mercury thermometers and 2 electronic thermometers. The continuous lighting system was used for the first seven days of life and on the eighth day of life was reduced to 20 hours /day with a break of two hours every 12 hours and up to 3 days before the end of the experiment. The continuous light system was returned (24 hours' light) during the experiment, the chicks were fed on protein and energy-balanced diets. Experiment treatments were as follows: - First treatment (T1) basal diet with no additives, basal diet + 500 g/ton of Optifeed®, basal diet + 250 g/ton of VêO® premium, basal diet 250 g/ton of Oleobiotec®, basal diet + 250 g/ton of Optifeed® + 125 g of VêO® premium + 125 g of Oleobiotec® /ton of feed and basal diet + Add 500 g Optifeed® + 250 g VêO® premium + 250 g Oleobiotec® /ton for treatments T1, T2, T3, T4, T5 and T6 respectively.

Table 1. Composition and calculated nutrient content of the experimental diets (%)

Ingredients	*Diets Types*		
	Starter (1-10 day)	**Grower (11-22 day)**	***Finisher (23-42 day***
Yellow corn	47.5	50.85	***54.84***
Wheat	10	10	10
soybean meal*	32	28	24
Proteins concentration **	5	5	5
Hydrogenated plant fat	3	4.15	4.3
Calcium diphosphate	0.7	0.5	0.4
Salt NaCl	0.1	0.1	0.1
Limestone	1.2	1.14	1.1
Methionine	0.25	0.13	0.13
Lysine	0.25	0.13	0.13
Total	100	100	100
Calculated nutrient content NRC.(1994)			
Metabolism Energy (kcal / kg)	3059	3177	3277
Crude protein (%)	22.5	20.9	19.3
Crude Fibers (%)	3.5	3.4	3.2
Lysine%	1.38	1.19	1.09
Methionine + cysteine %	1.08	0.92	0.88
Calcium %	1.02	0.95	0.9
Available phosphorus%	0.45	0.41	0.38

* Soybean meal used from Argentine Origin Crude protein content of 48% and 2440 kcal/kg represented energy. ** Proteins used in the production of Dutch Holland (imported) Wafi containing 40% crude protein, 2107 kcal / kg represented energy, 5% raw fat, 2.20% raw fiber, 4.20% calcium, 2.65% phosphorus, 3.85 Lysine, 3.70% methionine, 4.12% methionine + cysteine. It contains a mixture of rare vitamins and minerals that satisfy the bird's needs from these elements.

Six birds were killed from each treatment with 2 birds of each replicate, the liver was taken from them and frozen at 18 ° C. [8] was used to estimate oxidation (MDA), which is one of the products of lipid oxidation process in different tissues such as liver The Statistical Analysis System (SAS) [9] was used to analyze the study data to determine the effect of different treatments in the randomized design (CRD) was calculated according to the randomized design [10].

3. Results and Discussion

The results showed in figure (2) below that the addition of the stimuli of appetite for the value of Malondialdehyde (MDA) in the males broiler liver tissue under thermal stress conditions were highly effective as antioxidants by significant differences (P<0.05). The treatment of T6 was significantly reduced (P<0.05) in the value of daihydide, which reached (0.1317) mg / kg liver, compared to the other treatments. (0.5650) mg / kg liver, while the rest of the transactions added a significant decrease (0.05 P P) compared with control treatment (0.149, 0.3345) for T5 and T4 respectively, while there was no significant difference (0.05 P P) between T3 and T4, which showed a significant decrease of (P<0.05) (0.3848, 0.4004) mg / kg liver compared with T1 control treatment. Daihydide (MDA) is a byproduct of oxidation and decomposition of peroxides so it is one of the most important measures for measuring lipid oxidation [11].

The superiority of the additives is due to the lowest values of MDA because they contain compounds and active substances that are considered as natural antioxidants such as thyme, which is an antioxidant [12] because it contains antioxidants, phenols and flavonoids, as well as cinnamon containing compound The essential oils are antioxidants based on the ability of essential oils to donate hydrogen or electron to free radicals, and their ability to change sites [13].

Emitted electrons Within the structural structure of aromatic oils [14], as well as to contain the substances added Vitamin E, one of the best antioxidants, protects the body's unsaturated fatty acids from oxidation by free radicals, thereby preserving the cells of the body from oxidation processes [15]. BHT, a synthetic phenolic antioxidant with a hydrogen atom (Warner, 1986), has the ability to remove the roots that form before it enters the reaction chain [16].

Also included in the ingredients are salicylic acid, it has the property of reducing the heat of the body, this acid reduces the formation of prostaglandins by inhibiting the enzyme cyclooxygenase [17], which is responsible for the conversion of Acid of Arachidonic to the prostaglandins causing the body temperature and free radicals [18]. Salicylic acid also prevents the accumulation of platelets From becoming viscous [19]. The addition of vitamin E, C and aspirin to the broiler mix at 35 ° C resulted in a significant decrease (P<0.05) in the value of MDA compared with the control treatment free of additives and the lowest value of MDA recorded by treatment The addition of aspirin by 250 mg / kg feed as a result of the effect of the active ingredient in the aspirin, which is Salicylic acid, which alleviated the impact of heat stress [20]. Where the level of secretion of stress hormone corticosterone will decrease as a result of the lower effect of temperature by the materials used in the experiment, resulting in a decrease in the breakdown of peroxides and thus decrease in the value of MDA [21], the materials involved in the installation of additives used in the experiment As antioxidants prevent the oxidation of the cells of the body and protect the tissue from peroxides, as well as antioxidants prevent the destruction of protein, resulting in a lack of infection in many diseases [22].

Table (2) shows significant differences (P<0.05) in all cumulative performance characteristics from (1-42) days between the experimental treatments. All the addition coefficients were significant, especially the fifth treatment (T5), which included the addition of Optifeed® 250 g + VêO® premium 125 g + Oleobiotec® 125 g / t feed to the diet compared to the T1 treatment. T5 recorded the highest final body weight of 2826 g and T4, T2, T6, and T3 were recorded (2633, 2476, 2437, 2362) g respectively. The T1 control treatment achieved the lowest final body weight (2267) g in comparison with all the addition coefficients. T4, T2, T6, and T3 showed an increase in weight (2596, 2440, 2400, 2325) g respectively. T1 recorded the lowest cumulative increase in weight (2231) g compared with all the additional transactions. In the cumulative relative growth rate, T5 recorded the highest relative growth rate (194.77) while T1 recorded the lowest relative growth rate (193.63) compared with all other factors. In terms of cumulative feed consumption, T5, and T4 birds achieved the highest feed consumption rate of 3566 and 3555 g respectively, while T1 and T6 recorded an average feed consumption rate of 3421 and 3415, and (3330) g respectively.

As for T3 birds had a lower rate of consumption of feed during the cumulative period amounting to (3223) g. In terms of cumulative food conversion coefficient, T5 was the most significant improvement (P<0.05) was (1.278) g fed / g weight increase compared to the other factors that recorded a cumulative food conversion factor of 1.365, 1.370, 1.385, 1.423 g / (T2, T4, T3, and T6) respectively, while the control treatment (T1) recorded a deterioration in the cumulative food conversion factor (1.535 g / fed) compared to the other treatments. The

results of the statistical analysis are in figure 1 show the effect of adding different levels of Optifeed®, VêO® premium, and Oleobiotec® to the broiler males in the production index and economic index under stress conditions. (P<0.05) for the addition of the control treatment and the best superiority of T5 achieved (691). For the rest of the additive coefficients have achieved a measure of production index (601, 567, 535, 532) for T4, T2, T6 and T3 respectively. The control ratio (T1) was the lowest and reached (462). In the economic index, we also observe the same moral superiority (P<0.05) for the above transactions. To the absence of mortality between transactions length of study, which amounted to 42 days.

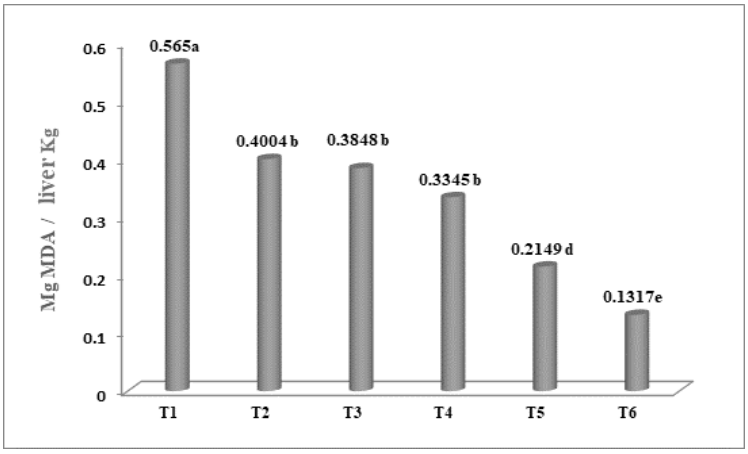

Figure 1. Effect of adding different levels of Optifeed®, VêO® premium ,and Oleobiotec® to diets males broiler in the production index and economic index under thermal stress conditions.

a, b, c: The different letters within one row indicate significant differences between the coefficients at a significant level (P≤0.05).
(T1): - basal diet (control) (T2): - basal diet with 500 g / t feed Optifeed.®(T3): - basal diet with 250 g / t feed VêO® premium.(T4): -basal diet with 250 g / ton feed Oleobiotec.® (T5): - basal diet with 250 g feed Optifeed® +125 g VêO® premium + 125 g Oleobiotec ® / t feed.(T6): - basal diet with 500 g feed Optifeed® +250 g VêO® premium + 250 g Oleobiotec ® / t feed.

Table 2. Effect of addition of different levels of Optifeed®, VêO® premium and Oleobiotec® to diet male's broiler in cumulative production performance (1-42) day, under heat stress conditions

Traits	Treatments								P-value
	T1	T2	T3	T4	T5	T6	Ave. Ad	SEM*	
Body Weight g/ bird	2267 e	2476 c	2362d	2633 b	2826 a	2437c	2500	170	0.0001
Weight Gain g/ bird	2231 e	2440 c	2325d	2596 b	2789 a	2400cd	2436	49.6	0.0001
Relative growth rate	193.6e	194.1c	193.d	194.4b	194.7 a	193.9 d	194.14	0.0971	0.0001
feed consumption g/ bird	3421b	3330bc	3223 c	3555 a	3566 a	3415 b	3418	67.2	0.0003
F.C. g bird / g W. G	1.535a	1.365 b	1.38b	1.370b	1.278 c	1.423 b	1.392	0.0374	0.0001

*SEM: Average standard error. a, b, c: The different letters within one row indicate significant differences between the coefficients at a significant level (P≤0.05). (T1): - basal diet (control)(T2): - basal diet with 500 g / t feed Optifeed.®(T3): - basal diet with 250 g / t feed VêO® premium.(T4): - basal diet with 250 g / ton feed Oleobiotec.®(T5): - basal diet with 250 g feed Optifeed® +125 g VêO® premium + 125 g Oleobiotec ® / t feed.(T6): - basal diet with 500 g feed Optifeed® +250 g VêO® premium + 250 g Oleobiotec ® / t feed.

The results of table (2) and figure (1) show significant superiority in all cumulative performance characteristics (1-42) days in favor of the added treatments, especially the fifth treatment (T5), which is added by Optifeed® 250 g + VêO® premium 125 g + Oleobiotec® 125 g / t feed, compared to the control treatment (T1), which showed significantly lower production performance than the addition treatments.

This indicates a cumulative effect of the various active substances involved in the synthesis of all additives used in the experiment containing essential oils and spices and natural and industrial oxidants and antiseptics, all acting as appetite stimulants through a reaction [23]. The center of the appetite in the brain through the axes of smell and taste, which encourage the birds to eat feed, which is located on the same axis as the center of stress in the brain, which cannot be stimulated at the same time as the center of appetite and subsequently led to increase the amount of feed consumption that [19]. The results of previous studies indicated that essential oils, plant extracts and spices increase digestive secretions such as saliva, yellow, and mucous secretions. Pancreas and Liver [24], because they contain effective compounds such as calcites, soap, phenol, thymol, carvacrol

and flavonoids [25], where the increase of most secretions of enzymes digestive system, for example, Almmliz and Tarbesin and leads to the maximum benefit of the nutrients available in the bird feed by increasing the permeability of the mucosa of the intestine and thus increasing the absorption of nutrients, D to promote the flow of blood to all parts and organs of the body which works to relieve heat stress and improve the health of birds [26].

4. Conclusions

In conclusion that adding various levels of Optifeed®, VêO® premium, and Oleobiotec® to the diets as appetite stimulants in the production Performance of broiler males under heat stress conditions. led to a significant decrease in all experimental trials of Malondialdehyde (MDA) for broiler liver tissue compared to the control treatment. Treatment (T6) recorded the lowest concentration of dehydrode (MDA) compared to other treatments.

Supplementary Materials:

No Supplementary Materials.

Author Contributions:

F. I. Al-Bazy and S. M. Abdulateef; methodology, writing—original draft preparation, B. F. Sulaiman; writing—review and editing. All authors have read and agreed to the published version of the manuscript.

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The study was conducted in accordance with the protocol authorized by the University of Anbar, Ethics Committee, Iraq. From a commercial farm, fertile eggs from Ross (308) strain broiler breeder hens were obtained.

Informed Consent Statement:

No Informed Consent Statement.

Data Availability Statement:

No Data Availability Statement.

Conflicts of Interest:

The authors declare no conflict of interest.

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