



The effect of adding the vegetable additive PFA and oil mixture (nigella, anise, thyme) on some productive traits of broilers

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Abstract

This study was conducted in the fields of animal production / College of Agriculture / University of Basra during the period from 20/5/1220 to 23/6/2021 to know the effect of adding PFA consisting of (Nigella seeds, anise, thyme) to feed and water and comparing it with the local oil mixture (Nigella sativa, anise, thyme) at different periods of time and their effect on some productive traits of broilers. The experiment was carried out in a completely randomized design. SPSS2019 statistical analysis and Duncan test. The results showed a significant superiority of all experimental treatments with the two control treatments T1, T2 in body weight, weight gain and food finance coefficient, where the results were very close.

Key Words: Vegetable additive, PFA , nigella, anise, thyme, broiler

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Introduction

Feed additives are ingredients that are added to animal food or drinking water to improve its quality, promote growth, break down anti-nutritional factors, absorb toxins, increase body immunity and resist diseases (Wady & Jassem, 2019). In recent years, the use of the plant additive PFA, which consists of a group of medicinal plants or their oils and their active and active substances, has become popular to stimulate growth, increase production and reduce the percentage of deaths as a result of improving the health status of animals and strengthening the immune system (Xia et al 2021), (Birmani et al 2019), (Kirchhell, 2020). Feed additives from medicinal plants or their oils are also important sources of diets because they contain intrinsic vitamins (A, D, E, K) and also contribute to increasing the absorption and digestion of lipoproteins (Hussein et al 2019). Aromatic plants contain biologically active substances that stimulate the digestion process and the production of digestive enzymes because they contain many active compounds such as (anithol

2003). Since aromatic plants consist of a large number of chemical compounds, so most likely, the ability of these compounds cannot be attributed to a single mechanism of action, but there are many different mechanisms of action for these phenolic compounds primarily responsible for giving medicinal plant extracts the important property as antibiotics that have no effects Side effects on animals or humans consuming these animals (AL-Aboudi.A.A.Khalaf 2021), (Barbarestani; et al 2020).

Materials and methods

This study was conducted in the field of poultry in the Department of Animal Production / College of Agriculture / University of Basra. Chicks were raised in homemade metal batteries, consisting of three floors, dimensions 1 x 1.5 m, and a height of 70 cm from the floor. 288 medium-sized, unsexed meat chicks weighing 40 g were distributed. At the age of one day of his chains (Ross 308) randomly on cages and with three replicates per treatment and (12)

and econol) (Tawfee, Ahmad 2014), (Janroz et al

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E-mail: chicks per replicate according to the complete random design (CRD), the birds were fed two rations starting from (1-3) weeks and containing 23.10% crude protein And 3010 kilocalories/energy represented and a growth diet from 21 days to 35 days old contained 20.14% crude protein and 3174 kilocalories/energy represented. The feeding and water supply were free and all measures were taken to maintain ideal conditions of heat, humidity and ventilation throughout the study period. study treatments
 T1: Add 150-mg/kg dry PFA to the feed for (1-5) week (control 1).
 T2: Add 3 mm/l liquid PFA to the drinking water

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from (1-5) a week (control 2).
 T3: Add 3 mm of the oil mixture / kg of feed from (1-3) a week.
 T4: Add 3 mm of the oil mixture / kg of feed from (3-5) a week.
 T5: Add 3 mm of oil mixture / kg of feed from (1-5) a week.
 T6: Add 3 mm of the oil mixture / liter of water to the drinking water for a period of (1-3) a week.
 T7: Add 3 mm of oil mixture / liter of water to drinking water for a period of (3-5) week.
 T8: Add 3 mm oil mixture / liter of water to drinking water for a period of (1-5) week.

Table 1: The proportions of the feed materials included in the formation of the starter and growth rations for broilers and the calculated chemical analysis

| Feed Ingredients: | Buddy's diet 1-21 days | Growing feed 22-35 days |
|---|------------------------|-------------------------|
| Corn | 42.75 | 41.75 |
| wheat | 15.0 | 22.0 |
| Soybean meal 44% | 34.5 | 27.0 |
| Protein Concentrate | 5.0 | 5.0 |
| Vegetable oil | 0.8 | 2.3 |
| Premix (a mixture of vitamins and minerals) | 0.2 | 0.2 |
| Limestone | 1.5 | 1.5 |
| Table salt | 0.25 | 0.25 |
| Total | 100 | 100 |
| Represented energy (kg)/kcal) | 3010 | 3174 |
| Crude protein % | 23.10 | 20.14 |
| Energy: Protein | 130.30 | 157.6 |
| Calcium (%) | 0.925 | 0.988 |
| Available phosphorous % | 0.42 | 0.51 |
| Lysine % | 1.35 | 1.17 |
| Methionine % | 0.52 | 0.49 |
| Methionine % + cysteine % | 0.886 | 0.826 |
| Tryptophan | 0.295 | 0.261 |

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According to the chemical analysis of the feed materials based on the nutritional analysis tables (AL-Fayyad & Naji 2011)

Results and discussion

The results of the statistical analysis (Table 2) of the effect of adding PFA and a mixture of oil (nigella, anise, thyme) on body weight (gm) for

broilers indicated that there were significant differences between treatments at the level ($p \leq 0.05$), and all treatments were close to the two treatments. The control (T2, T1) 1665.74, 1641.00, respectively, may be due to the presence of active and biologically active substances in both additives to PFA and the local oil mixture (Samson oladokun et al 2021).



Table 2: The effect of adding PFA and a mixture of oils (nigella, anise, thyme) to the feed and water on the average live body weight (g) of broilers at the age of 35 days (mean ± standard error)

| treatments | age by week | | | | |
|-------------|-------------------|-------------------|-------------------|--------------------|--------------------|
| | 1 | 2 | 3 | 4 | 5 |
| T1 | 122.17e ± 0.00 | 287.23b ± 0.00 | 661.60 ± 0.00 | 1037.24 ± 0.00 | 1665.74 ± 0.00 |
| T2 | 124.30b ± 0.00 | 288.45a ± 0.00 | 652.34a ± 0.00 | 1024.644 ± 0.00 | 1641.00 ± 0.00 |
| T3 | 123.22d ± 0.00 | 281.59e ± 0.00 | 640.49e ± 0.00 | 998.24e ± 0.00 | 1543.29e ± 0.00 |
| T4 | 127.15 ± 0.00 | 289.77 ± 0.00 | 650.57c ± 0.00 | 1011.57c ± 0.00 | 1585.70b ± 0.01 |
| T5 | 124.29b ± 0.00 | 288.45a ± 0.00 | 652.33b ± 0.00 | 1024.63a ± 0.00 | 1641.00c ± 0.00 |
| T6 | 128.71 ± 0.00 | 291.95 ± 0.00 | 654.53 ± 0.00 | 1018.63b ± 0.00 | 1598.80a ± 0.00 |
| T7 | 124.77a ± 0.00 | 286.30 ± 0.00 | 646.86 ± 0.00 | 1005.84d ± 0.00 | 1576.64c ± 0.00 |
| T8 | 123.47c ± 0.00 | 281.60d ± 0.00 | 640.50d ± 0.00 | 998.25e ± 0.00 | 1543.30d ± 0.00 |
| significant | * | * | * | * | * |

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* Indicates that there are significant differences between the treatments at the level (P < 0.05).

T1 Add 150 mg/kg dry PFA to the feed for (1-5) week (control)

T2 Add 3 ml / liter of liquid PFA to water for (1-5) week (control)

T3 Add 3 ml of oil mixture / kg of feed for a period of (1-3) weeks

T4 Add 3 ml of oil mixture / kg of feed for a period of (3-5) weeks

T5 Add 3 ml of oil mixture / kg of feed for a period of (1-5) weeks

T6 Add 3 ml of oil mixture / liter of water for a period of (1-3) weeks

T7 Add 3 ml of oil mixture / liter of water for a period of (3-5) weeks

T8 Add 3 ml of oil mixture / liter of water for a period of (1-5) weeks

Table (3) indicates the effect of PFA and the local oil

mixture on the weekly and cumulative weight gain (gm) for broilers, and it shows a significant difference (P≤0.05) between the experimental treatments, and the results were close to the two control treatments T1, T2 and all experiment treatments. The reason may be due to the presence of The active substances in both additives, the commercial PFA and the local oil mixture, whose effect was reflected on the weight characteristic and consequently the weekly and cumulative weight gain, as these compounds work synergistically in eliminating pathogens, whether in the intestine or in other areas to get rid of pathogens and toxins and thus positively affects the health of the animal And its interaction in improving body weight and weight gain (Mountzouris et al 2011).



Table 3: The effect of adding PFA and a mixture of oils (Nigella, anise, thyme) on the weekly and cumulative weight gain (gm) for broilers at the age of 35 days

| treatments | age by week | | | | | |
|-------------|------------------|-------------------|-------------------|-------------------|-------------------|------------------------|
| | 1 | 2 | 3 | 4 | 5 | cumulative weight gain |
| T1 | 82.17F ± 0.00 | 165.05 ± 0.00 | 374.36 ± 0.00 | 375.63 ± 0.00 | 628.49 ± 0.00 | 1625.74 ± 0.00 |
| T2 | 84.30d ± 0.00 | 164.18a ± 0.00 | 363.86 ± 0.00 | 372.30 ± 0.00 | 616.36 ± 0.00 | 1601.00a ± 0.00 |
| T3 | 83.46e ± 0.00 | 158.18e ± 0.00 | 358.89e ± 0.00 | 357.74e ± 0.00 | 545.04e ± 0.00 | 1503.29e ± 0.00 |
| T4 | 87.15b ± 0.00 | 162.62c ± 0.00 | 360.80b ± 0.00 | 361.00c ± 0.00 | 574.13b ± 0.00 | 1545.70c ± 0.00 |
| T5 | 84.29d ± 0.00 | 164.17a ± 0.00 | 363.85 ± 0.00 | 372.29a ± 0.00 | 616.35 ± 0.00 | 1601.00a ± 0.00 |
| T6 | 88.71a ± 0.00 | 163.26b ± 0.00 | 362.56a ± 0.00 | 364.10b ± 0.00 | 580.17a ± 0.00 | 1558.79b 0.00 |
| T7 | 84.77c ± 0.00 | 161.52d ± 0.00 | 360.55c ± 0.00 | 358.97d ± 0.00 | 570.79c ± 0.00 | 1536.65d ± 0.00 |
| T8 | 83.47e ± 0.00 | 158.13e ± 0.00 | 358.90d ± 0.00 | 357.75e ± 0.00 | 545.05d ± 0.00 | 1503.29e ± 0.00 |
| significant | * | * | * | * | * | * |

* Indicates that there are significant differences between the treatments at the level (P < 0.05).

T1 Add 150 mg/kg dry PFA to the feed for (1-5) week (control)

T2 Add 3 ml/liter of liquid PFA to water for (1-5) week (control)

T3 Add 3 ml of oil mixture / kg of feed from (1-3) weeks

T4 Add 3 ml of oil mixture / kg of feed from (3-5) weeks

T5 Add 3 ml of mixture of oils / kg of feed from (1-5) weeks

T6 Add 3 ml of oil mixture / liter of water from (1-3) a week

T7 Add 3 ml of oil mixture / liter of water from (3-5) week

T8 Add 3 ml of oil mixture / liter of water from (1-5) week

Table (4) indicates the effect of adding PFA and the local oil mixture on the coefficient of food finance (kg) for broilers at the age of 35 days. The results indicated that there were significant differences between the experimental treatments during the study period, where the best results were in the

two control treatments (T2, T1). It recorded 1.54 and 1.57, respectively, followed by the treatment of T5, which recorded 1.57. Then the other experiment transactions were matched by a decrease in the amount of feed consumed, that is, there was a positive improvement in the food finance factor, offset by a decrease in the amount of feed consumed, which indicates the maximum benefit from the amount of feed ingested by The reason for this may be attributed to the use of food additives PFA and the local oil mixture, as both contain the same component of medicinal plants, and the active substances contained in these substances may have improved the birds' sensory performance by increasing the birds' appetite, or the reason may be the elimination of pathogens And toxins within the digestive system of birds, which led to an improvement in body weight and weight gain, and benefiting from the amount of feed consumed, and thus increasing the efficiency of food finance. AL-Fayyad & Naji 1989. These results agreed with (Tayeri et al 2018), (Huang et al 2015).



Table 4: Addition of PFA and oil mixture (Nigella, anise, thyme) in the feed conversion efficiency (kg) for broilers at the age of 35 days (average = standard error)

| treatments | age by week | | | | | |
|-------------|-------------------|-----------------|-----------------|-----------------|-----------------|-------------------------|
| | 1 | 2 | 3 | 4 | 5 | Total food finance rate |
| T1 | 1.68 ± 0.00 | 2.04f ± 0.00 | 1.28f ± 0.00 | 1.89f ± 0.00 | 1.33f ± 0.00 | 1.54f ± 0.00 |
| T2 | 1.67a ± 0.00 | 2.07d ± 0.00 | 1.32e ± 0.00 | 1.92e ± 0.00 | 1.37e ± 0.00 | 1.57e ± 0.00 |
| T3 | 1.66c ± 0.00 | 2.20 ± 0.00 | 1.35b ± 0.00 | 2.03a ± 0.00 | 1.55a ± 0.00 | 1.69a ± 0.00 |
| T4 | 1.60e ± 0.00 | 2.13b ± 0.00 | 1.34c ± 0.00 | 1.99c ± 0.00 | 1.47c ± 0.00 | 1.64c ± 0.00 |
| T5 | 1.67a,b ± 0.00 | 2.06e ± 0.00 | 1.32e ± 0.00 | 1.91e ± 0.00 | 1.36e ± 0.00 | 1.57e ± 0.00 |
| T6 | 1.59f ± 0.00 | 2.09c ± 0.00 | 1.33d ± 0.00 | 1.97d ± 0.00 | 1.46d ± 0.00 | 1.62d ± 0.00 |
| T7 | 1.62d ± 0.00 | 2.14a ± 0.00 | 1.34c ± 0.00 | 2.00b ± 0.00 | 1.48b ± 0.00 | 1.65b ± 0.00 |
| T8 | 1.67b ± 0.00 | 2.21 ±0.00 | 1.36a ± 0.00 | 2.04a ± 0.00 | 1.56 ± 0.00 | 1.70 ± 0.00 |
| significant | * | * | * | * | * | * |

* Indicates that there are significant differences between the treatments at the level (P < 0.05).

T1 Add 150 mg/kg dry PFA to the feed for (1-5) week (control)

T2 Add 3 ml/liter of liquid PFA to water for (1-5) week (control)

T3 Add 3 ml of oil mixture / kg of feed from (1-3) weeks

T4 Add 3 ml of oil mixture / kg of feed from (3-5) weeks

T5 Add 3 ml of mixture of oils / kg of feed from (1-5) weeks

T6 Add 3 ml of oil mixture / liter of water for a period of (1-3) weeks

T7 Add 3 ml of oil mixture / liter of water for a period of (3-5) weeks

T8 Add 3 ml of oil mixture / liter of water for a period of (1-5) weeks

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