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ORIGINAL ARTICLE

Compared Between Anise Seeds (*Pimpinella Anisum* L.) And Roselle Flowers(*hibiscussabdariffa*) by Their Affected on Production Performance of Broiler

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ABSTRACT

Four hundred twenty unsexed broiler chicks Cobb were used to study the effect of two source of medicinal plants (Anise seed , A and Roselle flower ,K) supplementation on productive performance ,dressing percentages ,internal organ weights,abdominal fat and bacteria count (*E.coli* and *Staphylococci*)in small intestine and colon . The broiler chicks Cobb were divided into three equal groups with four replicate (35 bird in each)fed three diets ,Diet 1 (control group) contain none of the feed additives.Diet 2 and 3 (group 2 and 3) contain 6kg/Ton from A and K , respectively. The results revealed significantly (p <0.05)increases in live body weight ,body weight gain,feed consumption,feed conversion ratio, production index and significantly (p <0.05) reduction in mortality in A and K treatment groups as compared with control group. Dressing percentage ,liver and heart weights supplement groups (A and K) were significantly (p <0.05) increased ,while abdominal fat were significantly (p <0.05) reduced as compared with control group. However non significant differences(p>0.05) were shown across treatment groups in gizzard weight. The weights of primary carcass cuts (breast,thigh and drumstick) of supplemented groups (A and K) were significantly (p <0.05) increased and the secondary carcass cuts weights (neck,wings and back) were significantly (p <0.05) reduced as compared with control group. A count No. of harmful bacteria *E.coli* and *Staphylococci* in the small intestine and colon were significantly (p <0.05) decreased in supplemented groups as compared with those in control group. In conclusion ,feed additives such as Anise and Roselle were improved the productive performance of broiler chicks through increasing dressing percentage and reduce abdominal fat and harmful bacteria count in small intestine and colon .Also Roselle were the best one than other medicinal plant Anise by improved the productive performance.

Key words:

Introduction

Herbs and their extracts have been used widely in poultry nutrition as antimicrobial , antioxidant and natural growth promoters by stimulating the immune system [5].

Anise seed (*Pimpinella anisum* L.) contains an active ingredient such as Dianethole and Photanethole that was used for stimulating digestion and antiparasitic[2,15], antimicrobial [13,17] antifungal [16], Laxative properties [3] and milk secretion in

womens (AL-Odat and AL-Sheik,1984; AL-Husseiny and Mahdi, 1985).

It has been found that feeding broiler chickens 400 mg anise /kg diet resulted in a significant increase in average body weight , weight gain and feed conversion as compared to 100,200 mg anise/kg diet and control group (Ciftci, et.al, 2005). These results were in agreement with the finding by Simsek , et.al. [14] with regards to broiler performance and carcass characteristics for anise treatment over the control. AL-Kassie, [1] reported that feeding 1% of

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anise to Arbor Acer broiler chicks resulted in improvement on average daily gain and feed consumption as compared to feeding 0.5% of anise.

Karkade (*Hibiscus sabdariffa*) is another herbs which was used to lower blood pressure to the normal levels [7].

AL-Obeidy (2008) reported that karkade flowers contain vitamin C about 45-50 mg/100 ml solution, in addition it contain Citric acid, Tartaric acid from 3 to 4 % which play an important role on gut flora and then enhance nutrient absorption [10].

AL-Khalani (2009) studied the effect of adding karkade flowers and Anise seeds to the Layer , broiler and Japanese quail diets at levels of 2,4,6 kg/Ton diet.

This study was became to compared between karkade flowers and anise seeds at same level in order to get the best level of optimum performance for broiler.

Material and methods

Four hundred and twenty unsexed day-old broiler chicks (Cobb) were used in this study with initial body weight of 43 gm/chick. Birds were randomly allocated to (floor pens) three treatments (4 rep/treat.)

each replicate contains 35 birds.

Birds were fed starter ration from 1-28 days of age and finisher ration from 29-49 days of age. Diet and calculated composition are presented in Table 1. Vaccination program is presented in Table 2.

The parameters that were studied include average live body weight, gain weight, feed consumption, and feed conversion .

Mortality were recorded from 1-49 days experimental period and production index were calculated according to Naji (2006).

$$Pr oduction Index = \frac{Average\ body\ weight \times livability}{Number\ of\ days \times feed\ consu mption}$$

At the end of the study (49 days) birds were slaughtered and dressing percentage, internal organ weight and carcass characteristics were calculated. Swab were taken from duodenum and colon for bacterial count *E. coli* and *staphylococci* according to the method which was described by (Harrigon and Mccance ,1976).

Data were subjected to analysis of variance utilizing Complete Randomizes Design (CRD) according to SAS [12] and significant means were separated by Duncan’s multiple range test [6].

Table 1: Composition and calculated analysis of the experimental diets.

Ingredient (%)	Starter(0-28days)	Finisher (29-49days)
Yellow corn	48	59
wheat	9	5
Soybean meal(44%)	34	29
Protein concentrate*	5	5
Limestone	0.7	0.7
Salt	0.3	0.3
Fat	2	3
Dicalcium phosphate	1	1
TOTAL	100%	100%
Calculated composition**		
Crude protein%	21.7	19.0
ME.Kcal/Kgfeed	2945	3092
Lysine%	1.2	1.0
Methionine%	0.5	0.6
Methionine+Cystein%	0.85	0.77
Calcium%	1.1	1
Available phosphorus%	0.4	0.4

*Using KOUDIJS 5% as protein concentrate contain:crude protein 40%,lysine 4.25%,methionine 3.85%,meth.+cys. 4.25% ,ME ,(kcal /kg)2200,crude fat 3%,crude fiber 6%,Ca 11%,Total phosphorus 2%,sodium 2.55% ,added(Anti-oxidant,Phytase,Mould inhibitor).

** Calculated composition according to NRC (1994)

Table 2: Vaccination program in broiler chicken.

Age (days)	Vaccinate
1	Sugar with water at level 50 gm / liter water Newcastle (B1) strain
1-5	Anrosole antibiotic 1 cm3/ L water
8	Oily vaccinate (Newcastle + Gumboro + IB)
9	Gumboro (Lokard) strain + Newcastle (Lasota) strain in drinking water
10-11	Vitamins AD3E in drinking water
20	Gumboro (Lokard) strain + Newcastle (Lasota) strain in drinking water
20-21	Vitamins AD3E in drinking water
35	Newcastle (Lasota) strain

Results and discussion

The effect of anise or karkade on broiler performance are presented in Table (3). Body weight, weight gain and feed consumption were significantly (P<0.05) improved, while mortality rate was significantly (P<0.05) lower when feeding both herbs. This improvement could be due to the active compounds that is present in anise (anethole, eugenole, estragole and linalool) (AL-Nuamy, 2008). Which exert their growth promoting activity, antioxidant and stimulate the immune system of birds. Other possibilities, that anise oil may improve nutrient digestion and absorption by increasing the activity of pancrease enzymes [9].

The role of karkade in improving broiler performance could be due to its content of vitamin C, which have a positive effect on cell activity and increase O₂ consumption and as a result stimulate thyroid gland which play a major role in metabolism. Shukri (2001) reported that there was a positive correlation between thyroxin secretion and body weight in the presence of vitamin C, which increase the metabolism of phenylalanine and tyrosine, those the main amino acid in thyroid hormone synthesis and maintain growth hormone secretion and as a result of the increase in basal metabolism. The improvement in broiler performance is clear (P<0.05) when calculating productive index. These result showed that karkade flower was significantly (P<0.05) better than anise seed and the control group with regard broiler performance and fat-pad weight (Table 4).

There was a significant (P<0.05) increase in carcass cuts (breast and thigh) over the secondary cuts (neck, wings and back) when broiler diets was supplemented with anise seed or karkade flower (Table 5).

Microbial count in the duodenum and colon were significant (P<0.05) decreased in the presence of both herbs. The decrease in microbial count could be related to the presence of antimicrobial agent in anise especially *Staphylococci*, *E. coli* and *Salmonella* [13]. The decrease in microbial count when supplementing karkade may be related to its content of organic acid, citric acid and tartic acid (Table 6).

These acids make the gut environment more acidic which slow down or prevented microbial growth and improve gut flora and improve nutrient absorption [10].

It could be concluded from this study, that supplementing anise seed or karkade flower at level of 6 kg/Ton feed improve broiler performance, decrease fat-pad, microbial count in the duodenum and colon.

Karkade flower powder was superior to anise seed. The anise seed and karkade flower could be considered as a potential growth promoter for poultry.

As a result, anise or karkade may be natural growth promoter substance instead of antibiotics due to the effects of digestive stimulating, antimicrobial effect and positive effect on performance.

All birds were vaccinated against the common local diseases according to vaccination program as shown in Table (2).

Table 3: Effect of supplementing broiler diets with anise seed or karkade flower on broiler performance at 49 days of age.

Treatments ⁽²⁾	Average body weight (gm)	Average gain (gm)	Average feed Consumption (gm)	Feed conversion feed (gm) / gain (gm)	Mortality rate (%)	Productive index
C	⁽¹⁾ 1948c±10.9	1905b±13.6	3540c±15.3	1.9a±0.02	10.8a±0.5	190
A	2213b±8.6	2170a±10.1	3763.8b±3.7	1.8b±.001	5.9b±0.8	242
K	2293a±5.7	2250a±8.3	3946.7a±18.7	1.8b±0.01	1.9c±0.01	248

⁽¹⁾Mean ± Standard Error

⁽²⁾Treatment :C (control) , A 6kg/Ton anise seed, K 6kg /Ton karkade flower

⁽³⁾Means in the same column with significant difference between treatments at level (P<0.05)

Table 4: Effect of anise seed and karkade flower to broiler diets on dressing percentage, internal organ ,and fat-pad weight(as a percentage of body weight) at 49 days of age.

Treatments ⁽²⁾	Dressing Percentage %	Liver %	Gizzard %	Heart %	Fat – pad %
C	⁽¹⁾ 72.1b±2.2	3.1b±0.01	2.5a±0.4	0.56b±0.14	3.8a±0.01
A	74.3a±0.11	3.5a±0.7	2.6a±0.11	0.69a±0.11	2.0b±0.6
K	74.1a±3.1	3.6a±0.11	2.8a±0.22	0.75a±0.24	1.8b±0.05

⁽¹⁾Mean ± Standard Error

⁽²⁾Treatment :C (control), A 6kg/Ton anise seed, K 6kg /Ton karkade flower

⁽³⁾Means in the same column with significant difference between treatments at level (P<0.05)

Table 5: Effect of anise seed and karkade flower powder on carcass cuts as a percentage of carcass weight at 49 days of age.

Treatments ⁽²⁾	Breast	Thigh	Drum stick	Neck	Wings	Back
C	⁽¹⁾ 29.0b±0.11	14.8b±0.72	11.8b±1.21	7.1a±0.3	10.6a±0.02	26.5a±0.33
A	31.5a±0.12	16.0a±0.30	13.5a±0.77	6.2b±0.02	9.0b±0.72	23.5b±0.62
K	31.9a±0.01	16.3a±0.20	14.0a±0.20	6.3b±0.8	9.1b±0.59	23.8b±0.20

⁽¹⁾Mean ± Standard Error

⁽²⁾Treatment: C (control), A 6kg/Ton anise seed, K 6kg /Ton karkade flower

⁽³⁾Means in the same column with significant difference between treatments at level (P<0.05)

Table 6: Effect of anise seed and karkade flower powder on microbial count *E. coli* and *staphylococci* in the duodenum and colon.

Treatments ⁽²⁾	duodenum		Colon	
	<i>E. coli</i>	<i>Staphylococci</i>	<i>E. coli</i>	<i>Staphylococci</i>
C	⁽¹⁾ 7.3a	5.8a	6.5a	7.1a
A	3.9b	3.4b	4.2b	3.8b
K	4.2b	3.6b	3.8b	4.3b

⁽¹⁾Mean \pm Standard Error⁽²⁾Treatment :C (control) , A 6kg/Ton anise seed, K 6kg /Ton karkade flower⁽³⁾Means in the same column with significant difference between treatments at level (P<0.05)

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