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Effect Adding Guar Meal, Salinomycin and Mycofix to the Diets on Live Performance for Two Ross Broiler Sources

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Abstract: ***The experience was conducted to investigated adding guar meal 10%, salinomycine and mycofix to diet on live performance. 300 chicks on day old distributed in 10 TRTs with two replicate per TRT and (15 chicks) per replicate , (30 chicks) per TRT as follow :Ross (locally):T1 control,T2 Guar meal 10%, T3- Salinomycin 500g\ ton-(1-42)day, T4- Salinomycin 500g\ton& gaur meal 10% (1-42)day.)and T5- Salinomysine 500g\ ton &mycofix 2kg\ton &gaur meal10% (1-42). Ross(Belgian) T6-controle (1-42)day T7- Guar meal10% (1-42),T8- Salinomycin 500g\ ton-(1-42)day T9- Salinomycin 500g\ton& gaur meal 10% (1-42)day and T10- Salinomysine 500g\ ton &mycofix 2kg\ton &gaur meal 10%.(1- 42)day. in the end of study shown there were significant($p \leq 0.05$) increase of weight gain ,feed intake, body weight and improvements of feed conversion ratio in treatments fed guar meal 10%(2 &7) for two sources of Ross (Locally, ,Belgiuam) , compared with other treatments fed salinomycine ,mycofix(3,4,5,8,9&10) had lowest value all live performance. The results of this experiment showed that the use of guar meal 10 % as partial replacements by soybean not only have no negative effect on BW,WG and FI but also improve FCR in broiler chicks. The supplementation of salinomycin ,mycofix in diets causes negative effect on live performance.***

Keywords: Guar meal, Chicken, Mycofix, salinomycin

1. Introduction

As a primary source of animal protein, the poultry sector offers a valuable repository to bridge the gap between demand and the availability of balanced nutrition [1] . In the last two decades poultry industry has played an important role in meeting the shortage of animal protein through the increased availability of eggs and meat in world. Poultry production, particularly broiler production is the quickest way to increase the availability of high quality protein for human consumption. Since the feed cost alone contributes to about 70-75% of the total cost of production, economically poultry production is, therefore, possible only when the feed cost is reduced & efficiency of feed utilization is increased [2].The production of low quality feed has created variety of problems for the broiler industry resulting in poor performance and lower returns[3].To achieve a profitable balance among the cost of feed, the broiler performance, and quality of product, certain additives; are available in the market for use in broiler ration. Feed additives are products used in animal nutrition for purposes of improving the quality of feed and the quality of food from animal origin or to improve the animals performance and health. Common feed additives used in poultry diets include antimicrobials antioxidants ,Anticoccidial ,toxin binder like mycofixe, pH control agents , enzymes and Phytogenic [4] Some of these additives are recommended for chemotherapeutic and prophylactic purposes while others are reputed for the growth promoting effect[5].

Guar (Gyamopsis tetragonoloba) is a drought resistant annual legume prominently produced in India and Pakistan. The plant is grown for its galactomannan polysaccharide gum that in turn has many industrial and food processing applications [6]. Guar meal is a relatively inexpensive high protein meal produced as a by-product of guar gum manufacture. The protein content of guar meal ranges between 36 to 60% depending on fraction type. Guar meal also contains chemical compounds called saponins that are ranged from 5 to 13% by weight of dry matter. Saponins are currently being investigated for antibacterial, antiprotozoal and antifungal activities. [7]. Since the germ fraction of guar meal contains energy, enzyme, protein, methionine and phosphorus in higher levels, than that in soybean meal (SBM), as a partial replacement (10%) of SBM in poultry improves the economic strategy for decreasing feed costs without any negative effects on production[8]. [9] demonstrated that Guar meal has flavonoids and tannins. abundant antioxidants in the diet and they exhibit many biologically important functions which include protection against oxidative stress and degenerative diseases [10] Salinomycin is an ionophoric coccidiostat, which is widely used as a supplement in poultry feed to control infection with coccidia [11]. [12] concluded that continuous use of salinomycin may disturb the physiological process of kidneys and liver because it causes disturbance of metabolism of ions within the tissues of the host animals or to oxidative damage. [13] indicates that prolonged use of salinomycin, even at the recommended dose, for prophylaxis of coccidiosis can suppress growth [14]. Livestock and humans have been affected worldwide by the consumption of feed or food contaminated by naturally occurring mycotoxins. . Mycofix®, was effectively used in poultry for amelioration of ochratoxicosis and aflatoxin due to the dual mode of adsorption of mycotoxins with suitably located polar functional groups like aflatoxins by selective blend of minerals [15], and for alleviation of T-2 toxicosis [16]. Chronic oxidative stress like continuous use of drug has long been associated with decreased longevity in animals [17].The

indiscriminate uses of these additives lead to huge problems. Target of this study to evaluate the influence of gaur meal 10 %, salinomycine,mycofix as prophylaxis dose on live performance of two broiler sources feed on different types of diet by measures (body weight , weight gain, feed intakes , feed conversion ratio).

2. Material and Methods

This study was conducted in the poultry farm in the Agricultural ministry\ circle Agricultural Research\ Baghdad, from 27\3\2016 to11\5\2016. Use 300 one day old chick(Ross 308) were purchased from a local hatchery. On arrival, chicks were weighed and randomly distributed in to wood shavings covered floor pen then divided to ten experimental groups .Each group composed of two replicate pens with 15 chick .Each pen was 2.5×3 square meters with one feeder and one fount drinker. The experimental was completely randomized design and dietary treatments were as follows .

Ross (locally):T1 control,T2 Guar meal 10%, T3- Salinomycin 500g\ ton-(1-42)day, T4- Salinomycin 500g\ton& gaur meal 10% (1-42)day.)and T5- Salinomysine 500g\ ton &mycofix 2kg\ton &gaur meal10% (1-42)

Ross (Belgian) T6-controle (1-42)day T7- Guar meal10% (1-42),T8- Salinomycin 500g\ ton-(1-42)day T9- Salinomycin 500g\ton& gaur meal 10% (1-42)day and T10- Salinomysine 500g\ ton &mycofix 2kg\ton &gaur meal 10%.(1- 42)day.

The formulas and calculated nutrient of the basal diet are presented in Table 2 . The starter diets were fed for the first eleven days, grower diet for12-24 days , finisher diet were fed the remainder of the trial, The feeding and water provided in ad libitum for the study

The diets were made to complete requirement by the National Research Council [18] for broiler. Ambient temperature in the first week of trail was 32c˚ and decreased 2 c˚ a week till to 25 c˚ in the end of the experiment, illumination was 23 light with one hour of dark. Vaccines program according to veterinarian prescription.

Table 1: Vaccination Programs

Age of chicks (by days)	Types of the vaccine	Rout of administration
1	Newcastle(single oil)	Injections in back of neck
7	Newcastle (lasota)	Drinking water
14	Infectious bursar disease	Drinking water
17	Newcastle (lasota)	Drinking water
27	Newcastle (lasota)	Drinking water

Live performance was evaluated weekly on a pen basis through the following measurements until 42 days of age: body weight (BW), body weight gain (BWG), feed intake (FI), feed conversion ratio (FCR) [19]

3-Statistical Analysis: Data obtained were subjected by using analysis of variation ANOVA. Least significant difference (LSD) among different groups at 5% level was applied [20]

Table 2: Diet used in experiment (starter ,grower , finisher).

Ingredients (%)	Starter (0 -11)day		Grower(12-24)day		Finisher(23-42)day	
	GM(0)	GM(10%)	GM(0)	GM(10%)	GM (0)	GM (10%)
corn	49.09	49.07	47.29	51.5	46.22	55
Soybean meal	35	24	31	21	27	17
wheat	10	10	15.5	11	20	11
oil	2	2.8	2.6	3	3.2	3.5
premixes	2.5	2.5	2.5	2.5	2.5	2.5
Di calicium	0.5	0.6	0.4	0.4	0.3	0.4
limmestone	0.8	0.8	0.6	0.6	0.6	0.6
methionine	0.11	0.11	0.11	-	0.18	-
lysine	-	0.12	-	-	-	-
salt	-	-	--	-	--	-
Guar meal	-	10	-	10	-	10
Total weigt (kg)	100	100	100	100	100	100

Chemicals calculation of all type of diet

Total crude protein (%)	22.1	22	20.7	20.9	19.3	19.4
Fiber (%)	2.74	3.52	2.71	3.48	2. 67	3.4
Fat (%)	4.65	5.55	5.09	5.84	5.73	6.4
Methionine + cyctine	1.03	1.21	0.99	1.08	1.02	1.03
caicium	1.03	1.13	0.89	0.98	0.85	0.16
phosphors	0.48	0.48	0.49	0.47	0.49	0.46
methionine	0.66	0.88	0.64	0.76	0.68	0.74
cyctine	0.37	0.33	0.35	0.32	0.33	0.29
lysine	1.40	1.34	1.29	1.26	1.19	1.14
Total metabolizable energy (kcal \kg)	3029	3035	3096	3092	3157	3157

3. Result and Discussion

The result of this studied illustrate significant (P ≤ 0.05) differences among all treatments in two broiler lines of Ross (locally & Belgian), specially TRT (2&7) recorded significant (P ≤ 0.05) increase of live performance (LBW , WG , FI , FCR) as compared with other treatments. Guar meal is a good source of essential amino acids. The amino acid content of the guar meal protein makes guar meal a useful protein supplement for broilers and layers. In addition, about 88% of the nitrogen content is true protein that makes it potentially useful as an ingredient for poultry feed [21]. GM regarded a good source of essential amino acids because it has 3.22% lysine, 0.79%cystine, 1.94% threonine, 3.62% arginine, 3.7%leucine, 0.73% methionin 1.51%meth+cystine 0.68% tryptophan, 2.31%isoleucine, and2.35% valine [22] . The obtained results are similar to the findings by [23] and[24] found that no adverse effects of guar korma on broiler performance even at levels as high as 10% also found increased of feed intake when compared with SBM fed groups . Plant derived antioxidants are gaining more demand in poultry nutrition because their meat has high content of polyunsaturated fatty acids and susceptible to lipid oxidation [25]. [9]demonstrated that Guar meal has flavonoids and tannins. abundant antioxidants in the diet and they exhibit many biologically important functions which include protection against oxidative stress and degenerative diseases [26]. Also present study recorded significant (P ≤ 0.05)decrease of live performance (LBW , WG , FI , FCR) among all treatments in two broiler sources of Ross (locally & Belgium) nourished on salinomycin 500 gm /ton (T3 &T8), salinomycin 500 gm /ton & GM 10% (T4&T8) ,salinomycin 500 gm /ton & GM 10% &Mycofixe 2 kg /ton (T5& T10). The worst value of LBW ,WG ,FI,FCR may be due to add these drugs to the diet as prophylactic dose this practice may modify the intestinal flora and create a selective pressure in favor of resistant bacteria and this lead to the disturbance of feed nutrients absorption from the gut , this would lead to the depressions in growth performance .[27] correlated dietary-related differences in the microbial community composition within the ileum and cecum to improved growth performance in broilers. [28] were observed when treated 1 day old broiler chicks by diclazuril, semduramicin, salinomycin and maduramycin (1, 20, 60 and 5 mg/kg of diet, respectively) for 3 weeks.. There were negative effects on growth and feed conversion ratio in chickens treated by these drugs after 4 weeks. [29] studied effects of continuous and over dosage of salinomycin was given to layers (60, 120 and 180 ppm) in feed up to the age of 12 weeks. 60 ppm salinomycin, the recommended dose, body weight decreased significantly (p≤ 0.001) compared to control group. It indicates that prolonged use of salinomycin, even at the recommended dose, for prophylaxis of coccidiosis can suppress growth. [30] noted that salinomycin at a level of 60 mg kg-1 in feed caused a significant drop in hatchability, but not in egg production. The results of present study ,it was in line with [31], when they compared effect of some natural feed additives as anti-mycotoxins with Mycofix®Plus on growth performance, blood parameters and economic efficiency in broilers .They shown that from 0-5 weeks feed conversion ratio (FCR) indicated that birds fed diets Mycofix®Plus had worse FCR when compared to other nourished groups, Economic efficiency values were reduced for broilers fed any of experimental diets as compared to those fed control. Uses mycofixe has also adverse affect [31]. Chronic oxidative stress like continuous use of drug has long been associated with decreased longevity in animals, decrease growth [32] . Antioxidants from our diet play an important role in helping endogenous antioxidants for the neutralization of oxidative stress. The nutrient antioxidant deficiency is one of the causes of numerous chronic and degenerative pathologies [33]. So guar meal has natural agents like flavonoids and tannins. Flavonoids and many other phenolic compounds of plant origin have been reported as scavengers of reactive oxygen species (ROS), and are viewed as promising therapeutic drugs for ameliorated the oxidative stress

4. Conclusions

The addition of salinomycine at 500gm / ton and maycofix plus at 2 Kg /ton of two lines of broiler Ross strain (Loccaly , Belgium) diet have adverse affect on live performance (WG, BW ,FI and FCR). Supplement of guar meal in broiler diet at level % 10 as partial replacement for soybean in two sources of Ross (Locally and Belgium) which improved broiler performance;. Also the result of present study suggested that there was significantly differences between two sources of Ross (Loccaly & Belgium)among all traits of study.

5. Acknowledgement

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Table 3: Effect of different types of diet on body weight (gm) of two broiler sources(means ± SE)

Broiler sources	Age by week	T1	T2	T3	T4	T5
Rose Locally	1	0.500±108.5000 Ca	116.5000 ± 2.166 Ba	97.0± 1.00 E	103.650 ±5.11 Db	126.50 ± 4.833 Aa
	2	307.960 ±3.65 Ba	347.240 ±7.658 A	273.800 ±14.16 Cb	280.05 ± 7.68 Cb	333.600± 4.133 Ab
	3	673.600 ± 8.00 B	751.600 ± 9.96 A a	562.400 ± 27,10 Cb	579.00 ± 10.0 Cb	650.900 ± 4.80 B
	4	1253.00± 21.22 Ba	1324.00 ± 11.43 Aa	1067.00 ± 28.33 C	976.890 ± 8.19 Db	1083.00 ± 11.53 Ca
	5	1806.0 ± 39.32 Aa	1839.34 ± 14.68 Aa	1478.27 ± 44.57 B	1351.95 ± 3.78 C	1428.95 ± 17.88 Ba
	6	2330.20 ± 63.15 Bb	2546.46 ± 13.73 Aa	1969.96 ± 54.44 C	1792.02 ± 3.80 E	1837.90 ± 26.62 D
Ross Belgian		T6	T7	T8	T9	T10
	1	94.66 ± 1.55 Cb	107.500 ±2.166 Bb	95.500 ± 1.16 C	112.53 ± 0.178 Aa	111.500 ± 0.833 Ab
	2	276.500 ±8.16 Bb	331.400 ± 7.18 A	292.20 ± 4.0 Ba	324.300 ± 3.90 Aa	320.700 ± 3.20 Aa
	3	642.0 ± 10.0 B	699.810 ± 7.37 Ab	613.600 ± 14.74 Ca	655.500 ± 11.16 Ba	645.100 ± 15.36 B

	4	1183.60 ± 15.35 Ab	1200.4 ± 2.28 Ab	1071.50 ± 11.8 B	1068.80 ± 10.90 Ba	1001.0 ± 21.66 Cb
	5	1694.78 ± 17.75 Ab	1649.25 ± 3.43 Ab	1485.15 ± 14.61 B	1375.90 ± 12.06 C	1369.56 ± 35.45 Cb
	6	2411.34 ± 15.12 Aa	2328.85 ± 23.29 Bb	1977.54 ± 14.93 C	1835.20 ± 24.82 D	1798.30 ± 35.28 E

Different capital letters denoted significant (p≤ 0.05) differences among groups . Different small letters denoted significant (p≤ 0.05) differences between Ross(locally & Belgium).

Table 4: Effect of different types of diet on weight gain (gm) of two broiler sources (means ± SE) .

Broiler sources	Age by week	T1	T2	T3	T4	T5
Ross loccaly	1	64.350 ±0.78 Ca	71.500± 2.50 Ba	52.95±1.016 E	59.500 ± 5.16 Db	82.700 ± 5.10 Aa
	2	199.88 ± 3.21 Ba	231.0 ± 5.71 A	174.0 ±12.33 Cb	176.65 ± 2.61 Cb	207.50 ± 0.83 B
	3	366.04 ± 4.37 B	404.10 ± 1.98 Aa	305.55 ±13.6 Cb	299.0 ± 2.33 Cb	318.0 ± 0.66 C
	4	583.71 ± 9.57 Aa	566.53 ± 0.17 ABa	548.52 ± 30. Ba	398.25 ± 1.75 C	394.90 ± 39.7 Ca
	5	520.0 ± 12.71 A	518.20 ± 2.88 Aa	389.4 ± 13.5 Bb	376.26 ± 4.20 Ba	344.42 ± 5.96 C
	6	517.63 ± 27.4 Bb	708.96 ± 1.25 A	521.09 ± 10 B	441.11 ± 7.55 C	418.59 ± 0.89 C
Ross Belgian	1	T6	T7	T8	T9	T10
		53.500 ± 1.633 Cb	65.00 ± 2.133 Bb	53.85 ± 0.58 C	71.200 ± 0.20 Aa	70.25 ± 0.716 AbS
	2	168.60 ± 13.23 Cb	223.20 ± 5.22 A	197.50 ± 2.8 Ba	212.50 ± 4.16 Ba	210.0 ± 2.33 B
	3	364.08 ± 1.74 A	365.12 ± 0.24 Ab	330.50± 7.3 Ba	331.05 ± 7.28 Ba	324.45 ± 12.1 B
	4	543.74 ± 4.85 Ab	515.68 ± 8.30 Ab	448.85 ± 0.5 Bb	413.25 ± 0.28 C	356.90 ± 6.56 Db
	5	509.59 ± 2.26 A	451.72± 1.99 Bb	412.65 ± 2.5 Ca	309.99 ± 9.66 Eb	349.55 ±13.3 D
	6	708.17 ± 2.19 Aa	707.22 ± 11.8 A	509.11 ± 0.6 B	443.75 ± 4.31 C	407.70 ± 2.01 C

Different small letters denoted significant (p≤ 0.05) differences between sources of Ross(locally , Belgian).
Different capital letters denoted significant (p≤ 0.05) differences among groups

Table 5: Effect of different types of diet on Feed Intake (gm) of two broiler sources (means ± SE) .

Broiler sources	Age by week	T1	T2	T3	T4	T5
Ross loccaly	1	83.00 ± 0.95 Ba	82.31 ± 0.92 Ba	75.13 ± 0.91 Ba	82.43 ± 5.12 A	99.18± 4.42 Ba
	2	301.80 ± 0.61 Ba	300 ± 2.4 Ba	248.6 ± 5.6 Cb	307.5 ± 2.3 B	331.5± 4.0 Aa
	3	661.1 ± 2.0 A	670.78 ± 9.1 Aa	637.61 ± 9.0 B	654.36 ± 5.6 Ab	668.8 ± 0.6 Ab
	4	926.25 ± 11.7 Aa	909.10 ± 0.73 Aa	857.0 ± 5.0 Ca	760.0± 7.9 D	886.4± 16 Ba
	5	983.66 ± 2.9 Aa	1001.9± 0.5 Aa	979.96 ± 3.9 Aa	823.92 ± 3.5 B	902.37 ± 18.8 Aa
	6	1079.36 ± 27 Cb	1355.0 ± 0.30 Aa	1126.50 ± 2.25 Bb	1011.17 ± 17 Db	1151.10 ± 7.9 Ba
Ross Belgian	1	T6	T7	T8	T9	T10
		74.42 ± 2.3 Bb	75.14 ± 0.28 Ab	66.0 ± 0.40 Cb	84.64 ± 0.88 A	88.33 ± 0.98 Ab
	2	264.1 ± 8.1 Bb	273.7 ± 2.0 Bb	267.2±3 Ba	308.2 ± 1.7 A	314.6 ± 2.2 Ab
	3	656.0 ± 3.1 B	606.21 ± 0.62 Cb	615.91 ± 2.0 C	718.16 ± 29.4 Ba	763.4 ± 35.5 Aa
	4	810.7 ± 9.6 Ab	817.13 ± 0.85 Ab	770.3 ± 18.2 Bb	787.2 ± 17.5 B	806.1 ± 3.9 Ab
	5	911.81 ± 2.66 Ab	889.77 ± 1.81 Ab	818.83 ± 12.17 Bb	812.41 ± 24.0 B	834.24 ± 8.80 B
	6	1171.76 ± 4.28 Aa	1108.83 ± 7.66 Bb	1208.6 ± 60 Aa	1054.8 ± 10.9 Ba	1084.88 ± 16.5 Bb

Different small letters denoted significant (p≤ 0.05) differences between sources of Ross(locally , Belgian).
Different capital letters denoted significant (p≤ 0.05) differences among groups

Table 6: Effect of different types of diet on Feed convention ratio of two broiler sources (means ± SE) .

Broiler sources	Age by week	T1	T2	T3	T4	T5
Ross loccaly	1	1.30 ± 0.015 Ca	1.05 ± 0.036 Eb	2.24 ± 0.81 Aa	1.46 ± 0.02 Ba	1.28 ± 0.012 Db
	2	1.56 ± 0.024 Ba	1.23 ± 0.02 Ca	1.53 ± 0.07 Ba	1.68 ± 0.007 Aa	1.58 ± 0.012 Ba
	3	1.88 ± 0.012 Ca	1.61 ± 0.012 Da	2.15 ± 0.060 Aa	2.122 ± 0.007 Aa	2.072 ± 0.014 Bb
	4	1.53 ± 0.007 D	1.50 ± 0.009 D	1.70 ± 0.060 Cb	1.8±0.007 Bb	2.05 ±0.01 A
	5	1.28 ± 0.012 B	1.05 ± 0.036 Db	1.46 ± 0.015 Aa	1.45 ± 0.024 Aa	1.23 ± 0.015 C
	6	2.15 ±0.06 Ca	1.86 ± 0.015 Da	2.13 ± 0.024 Cb	2.25 ± 0.015 B	2.67 ± 0.014 Aa
Ross Belgian		T6	T7	T8	T9	T10
	1	1.28 ± 0.012 Bb	1.13 ± 0.024 Da	1.20 ± 0.009 Cb	1.19 ± 0.009 Cb	2.06 ± 0.804 Aa
	2	1.41 ± 0.007 Ab	1.13 ± 0.024 Bb	1.42 ± 0.030 Ab	1.44 ± 0.028 Ab	1.47 ± 0.014 Ab
	3	1.78± 0.012 Cb	1.57 ± 0.007 Db	2.01 ± 0.042 Bb	1.97 ± 0.014 Bb	2.13 ± 0.007 Aa
	4	1.54 ± 0.006 D	1.50 ± 0.004 D	1.81 ± 0.042 Ca	1.945 ± 0.036 Ba	2.01 ± 0.007 A
	5	1.27 ± 0.014 A	1.13 ± 0.024 Ca	1.21 ± 0.0122 Bb	1.18 ± 0.012 Bb	1.26 ± 0.024 A
	6	1.68 ± 0.012 Cb	1.55 ± 0.36 Cb	2.29 ± 0.12 Ba	2.27 ± 0.014 Bb	2.57 ± 0.048 Ab

Different capital letters denoted significant (p≤ 0.05) differences among groups
Different small letters denoted significant (p≤ 0.05) differences between sources of Ross(locally , Belgian).

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