Effect of partial replacement of raw and treated wheat bran with hydrochloric acid, ascorbic acid and bakery yeast for wheat in broiler diets on production performance

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Received:
Apr. 28, 2022

Accepted:
May 30, 2022

Published:
June 25, 2022

Abstract

The present study was aimed to investigate the effect of partial replacement of raw wheat and treated by HCL, bakery yeast (*Saccharomyces cerevisiae*), and ascorbic acid instead of wheat on broiler productivity. A total of 405 two weeks old of unsexed Ross 308 of broiler chicks were used in the experiment ,distributed randomly to nine treatments ,the chicks were fed on two rations ,grower and finisher rations . The results revealed that the treatments included wheat bran of treated (with 25% replacement)showed no significant differences as compared to control group in live body weight ,weight gain ,at 42 days of age. Also, there were a significant increase ($P < 0.01$) in the feed intake at (3-6) weeks in favor of (T4) and (T7) compared with the control treatment (T1). Most of the replacement treatments achieved a significant improvement in the feed conversion ratio. no significant differences for all treatments in the dressing percentage and the relative weight of the breast piece. Also, no significant differences appeared in the percentage of mortality, while most of the replacement treatments gave very good economic indicators and production indexes.

Keywords: ascorbic acid, bakery yeast, broiler chickens, HCL acid, wheat bran.

Introduction

It is also well acknowledged that nutrition accounts for the vast majority of the total cost of chicken production, and that grains such as corn and wheat comprise the vast majority of feed materials. As a result, the researchers began to consider alternative feed materials early on, with the least amount of difficulty and cost, and without compromising the birds' productive performance. Due to the fact that fodder accounts for more than 70% of total production costs [1], many non-traditional fodder alternatives have been used to increase producer profitability [2], and wheat bran is one of these alternatives. However, it is differentiated by its high protein content, which is rich in some amino acids in proportions comparable to those found in wheat, making it a potential partial substitution for other grains used in chicken feeds. Wheat bran also includes phytase, an enzyme that increases phosphorus availability [3].

Wheat bran contains about 1300 kilocalories/kg of energy metabolizable energy, and its crude protein concentration is estimated to be 15.7%, ether extract at 3%, and crude fiber at around 11%, with a good supply of essential amino acids [4]. However, wheat bran's low volumetric density is a major deciding factor in its use in chicken feeds because it fills a significant amount of the bird's alimentary tract, limiting the bird's access to the primary nutrients required to meet its needs. As a result, it is not recommended to use them in large quantities, particularly in the first meals for chicks [5]. Several treatments, including physical and chemical procedures, have been utilized in the processing of grain byproducts or materials containing high fiber content. Heat, pressure, roasting, chemical treatments, enzyme addition, and other methods are used to increase the nutritional content of these items. Many researchers have succeeded in their efforts to improve its digestion coefficient, whether by feeding ruminants or domestic birds. [6, 7 and 8]. Therefore, this study aimed to try to improve the nutritional value of this substance by treating it with **(** bakery yeast (*Saccharomyces cerevisiae*), HCL, ascorbic acid **)**and introducing it as a partial substitute instead of wheat, in proportions of 25% and 50% in diets of broilers the growth and final.

Materials and Methods

This study was conducted in one of the poultry farms of the private sector, for the period from 28/9/2020 to 8/11/2020, in which 405 unsexed meat chicks - Ross 308 were used at two weeks old, and with an initial weight of 39.5 g/chick, as the chicks were raised inside a hall with the ground system. The dimensions of the hall were (30m x 10m) All the requirements for breeding were provided, The temperature was managed by gas incubators, vacuums, and electronic and mercury thermometers where the floor was spread with sawdust with a thickness of 3-5 cm, after sterilization and fumigation. The chicks were then randomly assigned into nine treatments with three replicates on the 15th day of rearing. Each replicate had 15 chicks fed on equal ratios of represented energy and protein Table(1 and 2). *Ad libitum* feeding and water were provided. Weekly live body weight, cumulative feed consumption, and a cumulative feed conversion factor for the period (3-6) weeks, production index, and economic index were calculated. The treatments were as follows:

T1: included the basic diet without replacement (control diet).

T2: substituted of 25% of raw wheat bran has been replaced with wheat.

T3: substituted of 50% of raw wheat bran has been replaced with wheat.

T4: substituted of 25% of the wheat bran treated with HCL was replaced by wheat.

T5: substituted of 50% of the wheat bran treated with HCL was replaced by wheat.

T6: substituted of 25% of the wheat bran treated with yeast bakery yeast (*Saccharomyces cerevisiae*) has been replaced by wheat.

T7: substituted of 50% of the wheat bran treated with bakery yeast (*Saccharomyces cerevisiae*) has been replaced by wheat.

T8: substituted of 25% of the wheat bran treated with ascorbic acid was replaced with wheat.

T9: substituted of 50% of the wheat bran treated with ascorbic acid was replaced with wheat.

The quantities of wheat bran, which was substituted for wheat in the diet, was carried out according to the feeding tables of ROSS 308. It was estimated for each treatment (55 kg) for the growth and final periods, Use hydrochloric acid (HCl) sourced from an Indian company, Central Drug House (P) Ltd, which has the following information (Molecular Weight 36.46, Density 1.18, Concentration 0.36), The source of L-ascorbic acid was an Indian company (Alpha Chemika), chemical symbol ($C_6H_8O_6$), which is the active form of vitamin C, and bakery yeast (Saccharomyces cerevisiae), which was obtained from local markets.

Amounts of water used for immersion and mixing:

1) Every 1 kg of wheat bran is immersed and mixed with 1.25 liters of water , with a mathematically estimated amount of HCL (590 ml) to obtain the dilute acidic solution with a standard (0.1 molar).
2) 68,750 milliliters of water + 275 grams of bakery yeast (*Saccharomyces cerevisiae*) (dissolved 5 grams per 1.25 liters of water) + 55 kilograms of wheat bran.
3) 68,750 milliliters of water + 275 grams of ascorbic acid (dissolving 5 grams per 1.25 liters of water) + 55 kilograms of wheat bran.

After the soaking and mixing processes for the three treatments, the filling process was carried out in several stages, and then it was placed in black nylon bags and closed. Upon the expiry of the specified period for the transactions two days, the contents were emptied individually onto nylon mattresses and a concrete floor to dry for two days with continuous stirring to ensure that they were dried from moisture. Then they were collected and ready to be mixed to be one component of the feed. The broiler diets for the study were prepared according to the Breeding Guide for Broilers 308 [9].

Statistical analysis

SAS [10] was used in data analysis to investigate the effect of different treatments on studied traits using a completely randomized design (CRD). The Duncan test [11] was used to compare the significant differences between the averages.

Results and Discussion

The results were shown in table (3), the partial replacement of raw wheat bran and chemically and biologically treated wheat substitutes did not significantly affect the live body weight rates of all treated birds in the third and fourth weeks. While a significant ($P < 0.01$) was observed in the fifth week, as the results indicated a highly significant ($P < 0.01$) for the treatments T8, T6, and T1 compared to the raw replacement treatments for wheat bran T2 and T3 with ratios of substitution 25% and 50%, and mathematically with transactions T9, T4, T5, and T7, No significant differences were recorded between treatments T9, T4, T7, T5 and T2, and the lowest live weight for this week of rearing was for treatment T3. T6 and T8, continued to give the highest rates of live body weight ($P<0.01$), compared with the T5, T7, T2, and T3. There were no significant differences between treatments T1, T4, and T9 and between T4 and T9 with T5 and T7. Whereas, treatment T3 recorded the lowest average live body weight at the end of the rearing period of 42 days. It is clear that the replacement of wheat bran treated with bakery yeast (*Saccharomyces cerevisiae*), and ascorbic acid by 25% each instead of wheat in broiler diets has superiority significant in the live body weight rates at the end of the rearing period. Wheat bran has a large variety of proteins, most of which are trapped in their cell walls, which are not exploited in their raw state because of the presence of a polysaccharide wall that resists digestion in the intestines [12].

Table (1): components and nutrient composition of growth ration (15-28) days

Components%	growth ration 15-28 days old								
	T1	T2	T3	T4	T5	T6	T7	T8	T9
yellow corn	34.9	32.5	32	32.5	32	32.5	32	32.5	32
wheat	30	22.5	15	22.5	15	22.5	15	22.5	15
Soybean meal (48% crude protein)	26.6	26.5	26.7	26.5	26.7	26.5	26.7	26.5	26.7
wheat bran	-	7.5	15	7.5	15	7.5	15	7.5	15
protein concentrate*	5	5	3.5	5	3.5	5	3.5	5	3.5
sunflower oil	2	4.5	6.5	4.5	6.5	4.5	6.5	4.5	6.5
limestone	1.2	1.1	1.0	1.1	1.0	1.1	1.0	1.1	1.0
salt	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Di-Calcium Phosphate**	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Mixtures of vitamins and minerals***	0.1	0.2	0.1	0.2	0.1	0.2	0.1	0.2	0.1
Total	100	100	100	100	100	100	100	100	100
Calculated Chemical Analysis****									
crude protein %	21.2	21.2	21	21.2	21	21.2	21	21.2	21
ME (kilo calories/kg)	3052	3055	3052	3055	3052	3055	3052	3055	3052
fat %	4.3	6.8	8.8	6.8	8.8	6.8	8.8	6.8	8.8
methionine %	0.50	0.50	0.44	0.50	0.44	0.50	0.44	0.50	0.44
Lysine %	1.19	1.20	1.16	1.20	1.16	1.20	1.16	1.20	1.16
methionine + cysteine %	0.74	0.71	0.63	0.71	0.63	0.71	0.63	0.71	0.63
Calcium %	0.42	0.41	0.34	0.41	0.34	0.41	0.34	0.41	0.34
available phosphorous %	0.77	0.82	0.81	0.82	0.81	0.82	0.81	0.82	0.81
fiber %	3.1	3.6	4.1	3.6	4.1	3.6	4.1	3.6	4.1

(T1) Comparative diets, (T2) raw wheat bran 25%, (T3) raw wheat bran 50%, (T4) wheat bran treated with acid Hcl 25%, (T5) wheat bran treated with acid Hcl 50%, (T6) wheat bran fermentation treated with bakery yeast (Saccharomyces cerevisiae) 25%, (T7) wheat bran fermented with bakery yeast (Saccharomyces cerevisiae) 50%, (T8) wheat bran treated with ascorbic acid 25%, (T9) wheat bran treated with ascorbic acid 50%, Note: Replacement ratio (25%) and (50%) of wheat. * Protein concentrate for poultry feeding Brocon-5 Special W, a product of the Dutch Al-Wafi Company, metabolic energy 2117 kcal/kg, crude protein 40%, crude fat 5%, crude fiber 2.81%, calcium 3.14%, available phosphorous 5.38%, lysine 3.85 %, methionine 3.70%, methionine + cysteine 4.12%, phytase enzyme additives - 20,000.00Fyt/kg, antioxidant 41.30 mg/kg.** Dicalcium Phosphate, produced by the Belgian company Intraco, phosphorous 18%, calcium 24%.*** Mixtures of vitamins and minerals CHOLIVIT-M produced by the Jordanian company Fabco, each gram contains 8000 IU vitamin A, 1500 IU vitamin D3, 1 international unit vitamin E, 250 mg vitamin K3, 0.6 mg vitamin B1, 0.75 mg vitamin B2, 0.25 mg Vitamin B6, 0.20 mg Vitamin B12, 0.06 mg folic acid, 6 mg nicotinic acid, 4 mg calcium pantothenate, 0.5 mg iron sulfate, 0.4 mg manganese sulfate, 0.15 mg zinc sulfate, 0.04 mg copper sulfate, 0.01 mg chloride cobalt.**** The nutrient values for each feed material were calculated according to the reports of the US National Research Council (NRC, 1994).

Table (2): components and nutrient composition of finisher ration (29-42) days

Components%	finisher ration 29-42 days old								
	T1	T2	T3	T4	T5	T6	T7	T8	T9
yellow corn	39.8	37.6	35.6	37.6	35.6	37.6	35.6	37.6	35.6
wheat	30	22.5	15	22.5	15	22.5	15	22.5	15
Soybean meal (48% crude protein)	21.4	21.2	20.8	21.2	20.8	21.2	20.8	21.2	20.8
wheat bran	-	7.5	15	7.5	15	7.5	15	7.5	15
protein concentrate	5	5	5	5	5	5	5	5	5
sunflower oil	2.2	4.6	7	4.6	7	4.6	7	4.6	7
limestone	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
salt	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Di-Calcium Phosphate	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
Mixtures of vitamins and minerals	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Total	100	100	100	100	100	100	100	100	100
Calculated Chemical Analysis*									
crude protein %	19.15	19.14	19.10	19.14	19.10	19.14	19.10	19.14	19.10
ME (kilo calories/kg)	3108	3106	3105	3106	3105	3106	3105	3106	3105
fat %	4.6	7	9.5	7	9.5	7	9.5	7	9.5
methionine %	0.48	0.47	0.46	0.47	0.46	0.47	0.46	0.47	0.46
Lysine %	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05
methionine + cysteine %	0.72	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73
Calcium %	0.45	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46
available phosphorous %	0.71	0.75	0.80	0.75	0.80	0.75	0.80	0.75	0.80
fiber %	3.0	3.5	3.9	3.5	3.9	3.5	3.9	3.5	3.9

(T1) Comparative diets, (T2) raw wheat bran 25%, (T3) raw wheat bran 50%, (T4) wheat bran treated with acid Hcl 25%, (T5) wheat bran treated with acid Hcl 50%, (T6) wheat bran fermentation treated with bakery yeast (Saccharomyces cerevisiae) 25%, (T7) wheat bran fermented with bakery yeast (Saccharomyces cerevisiae) 50%, (T8) wheat bran treated with ascorbic acid 25%, (T9) wheat bran treated with ascorbic acid 50%, Note: Replacement ratio (25%) and (50%)) of wheat. * NRC 1994 .

Table (3): Effect of partial replacement of raw and treated wheat bran for wheat on the live body weight of broiler (mean ± standard error)

Treatments	live body weight (gm/bird) for weeks				
	2	3	4	5	6
T1	9.93±428.87	30.55±793.27	58.82±1256.10	[a] 85.72±1778.43	[ab] 90.75±2288.53
T2	9.96±419.83	18.94±800.53	33.39±1230.30	[bc]59.45±1605.53	[cd]63.99±2074.93
T3	17.14±424.26	38.27±778.73	54.06±1209.50	[c]40.31±1584.60	[d]49.44±2037.80
T4	10.58±417.80	5.13±795.13	12.41±1265.77	[ab]29.86±1749.57	[abc]35.78±2261.13
T5	16.51±439.63	26.56±829.56	15.68±1228.93	[abc]22.19±1666.40	[bcd]14.97±2096.10
T6	8.59±448.33	33.06±843.73	19.24±1293.63	[a]71.43±1795.87	[a]63.36±2311.37
T7	6.09±435.56	17.95±795.36	9.55±1222.43	[abc]3.06±1648.73	[bcd]72.61±2088.70
T8	0.88±437.93	6.95±828.20	13.72±1304.73	[a]54.28±1810.77	[a]71.59±2307.70
T9	12.17±450.23	15.61±814.26	45.37±1261.83	[ab]29.46±1761.73	[abc]75.49±2280.90
level of significant	N.S	N.S	N.S	**	**

T1: The control group was free of wheat bran, T2: the replacement of raw wheat bran at 25%, T3: the raw rice bran at 50%, T4: the replacement for wheat bran treated with HCL at 25%, T5: the replacement for wheat bran treated with HCL at 50 % , T6: Replacement of wheat bran treated with bakery yeast(*Saccharomyces cerevisiae*) at 25%, T7: Replacement of wheat bran treated with bakery yeast(*Saccharomyces cerevisiae*) 50%, T8: Replacement of wheat bran treated with 25% ascorbic acid, T9: Replacement of wheat bran treated with ascorbic acid at 50%:, The averages carrying different letters within the same column differ significantly between them.** There are significant differences at the 0.01 . Non - significant : N.S: It means that there are no significant differences between the means.

And because bakery yeast (*Saccharomyces cerevisiae*), improves the digestion coefficient by 20% and decomposes 15% of cellulosic fibers [13], there has been an increase in the readiness of nutrients in the digestive tract as well as the sugars found in fiber, as well as bakery yeast (*Saccharomyces cerevisiae*), helping to provide enzymes, vitamins, and other nutrients that lead to an increase in the response to growth and an increase in the efficiency of utilization of the metabolism process in the body [14], mentioned [15] that the introduction of fermented wheat bran in broiler diets enhanced the activity of the enzymes xylanase and amylase in the duodenum, and its results indicated that there is a higher percentage of these enzymes in the sections of the small intestine that enhance the digestion process in the intestines of broilers. As for chemical, mineral, or organic treatments with which raw wheat bran was treated, which showed a statistical or arithmetic superiority with each other in the character of live body weight, they may have an effect in improving the nutritional value of wheat bran and then improving its digestion coefficient, and this improvement may be attributed to the effect of these treatments on the activity of some nutritional inhibitors and reducing their percentage. Our results agreed with what was shown by [7] the recorded superiority live body weight at 42 days age fermented wheat bran 12% with it rate in ration , our results were in line with the

results of [16] when fermenting wheat bran with *Trichoderma longibrachiatum* to improve the nutritional value of wheat bran and evaluate growth performance when it was introduced into broiler rations to be a new feed source.

As for the other productive traits of broilers, the statistical analysis in table (4) showed the cumulative weight gain rate (3-6) weeks, as the moral superiority was treatments T8, T6, and T1 compared to T5, T2, T7, and T3, and it did not differ significantly with T4 and T9, and no significant difference was recorded between treatments T4, T9, T5, T2, and T7, and T3 did not record a significant difference with T5, T2, and T4, and the lowest weight gain rate was recorded for treatment T3,it is noted that the replacement of raw wheat bran and treatment with ascorbic acid and bakery yeast (*Saccharomyces cerevisiae*) at a percentage of 25%, there was a significant increase compared with the other experimental treatments, mentioned [15] that the microorganisms in the cecum were higher in the presence of fermented wheat bran. A possible reason may be that the dominant microorganisms increased on the weak species which have similar effects to probiotics [17], the growth performance of broilers is strictly related to the diversity of microorganisms in the cecum, acid treatments also have a direct impact on the microbial community and the healthy environment of the small intestine, Hence, these reasons may be reflected in the weight gain rates of these significantly superior treatments. The results of our study agreed with that of [18] at the age of 35 days of rearing, which did not show any statistical differences between the control treatment and the treatments of adding wheat bran fermented by *Bacillus amyloliquefaciens* (B.a) or bakery yeast (*Saccharomyces cerevisiae*) (S.c). This result was also consistent with the findings of [19 and 20].

significant difference ($P<0.01$) in cumulative feed consumption rates for the birds of T4 and T7, when compared to the control treatment, T1. On the other hand, no significant differences were found between the control treatment T1 and the treatments T8, T2, and T3. These treatments did not differ significantly from T9.

(HCL, ascorbic acid, and bakery yeast (*Saccharomyces cerevisiae*)) have all contributed to increasing the digestibility of wheat bran and thus increasing the maximum benefit from the quantities of feed intake by the birds. by increasing the number of beneficial bacteria and the healthy internal environment.

Table (4): The effect of partial replacement of raw and treated wheat bran for wheat on the productive performance of broilers (mean ± standard error)

Treatments	Weight gain (3-6) weeks	Feed intake (3-6) weeks	Feed conversion ratio (3-6) weeks	dressing percentage	Breast weight percentage
T1	^{a}80.82±1859.67	^{d}100.35±3160.23	^{d}0.03±1.70	0.05±70.58	0.48±34.50
T2	^{bc}56.27±1655.10	^{cd}51.00±3267.87	^{abc}0.03±1.97	1.90±71.66	2.14±34.14
T3	^{c}32.37±1613.53	^{cd}30.76±3262.93	^{ab}0.05±2.02	2.49±70.40	0.60±15.70
T4	^{ab}45.84±1843.33	^{a}99.61±3564.83	^{bc}0.10±1.94	0.97±73.78	1.06±34.33
T5	^{bc}30.86±1656.47	^{abc}53.24±3402.80	^{ab}0.06±2.05	1.31±72.76	0.61±33.66
T6	^{a}59.13±1863.03	^{ab}41.29±3516.87	^{bcd}0.07±1.89	0.54±69.80	0.65±37.00
T7	^{bc}76.36±1653.13	^{a}44.41±3564.67	^{a}0.10±2.16	1.00±72.33	2.97±35.55
T8	^{a}70.72±1869.77	^{cd}21.35±3271.33	^{cd}0.08±1.76	0.53±71.12	0.97±35.97
T9	^{ab}63.33±1830.67	^{bcd}77.75±3351.07	^{bcd}0.04±1.83	0.12±71.83	1.00±34.47
level of significant	*	**	**	N.S	N.S

T1: The control group was free of wheat bran, T2: the replacement of raw wheat bran at 25%, T3: the raw wheat bran at 50%, T4: the replacement for wheat bran treated with HCL at 25%, T5: the replacement for wheat bran treated with HCL at 50 % , T6: Replacement of wheat bran treated with bakery yeast(*Saccharomyces cerevisiae*) at 25%, T7: Replacement of wheat bran treated with yeast of bakery yeast (*Saccharomyces cerevisiae*) at 50%, T8: Replacement of wheat bran treated with 25% ascorbic acid, T9: Replacement of wheat bran treated with ascorbic acid at 50%:, The averages carrying different letters within the same column differ significantly between them*,* * There are significant differences at the 0.05 probability level. and 0.01 respectively

Non - significant : N.S: It means that there are no significant differences between the means.

As well as the palatability of birds to these diets treated with (HCL, ascorbic acid, and bakery yeast (*Saccharomyces cerevisiae*)), the volumetric density of wheat bran is low, which occupies a large volume of the space in the birds' digestive tract. As a result, the proportion of it in the diet influences the amount of feed intake by the consumer [5], our results also agreement with [21, 22 and 7], a highly significant improvement ($p<0.01$) in a cumulative feed conversion rate achieved by T1 compared to the lowest feed conversion ratio of the T7, T5, and T3 treatments. The results showed that there was a moral and arithmetic improvement in the ascorbic acid and bakery yeast (*Saccharomyces cerevisiae*) treatment, indicating the high nutritional value of this by-product, which was intake with a balanced broiler diet in terms of energy and protein; additionally, this improvement may be due to an increase in the weight gain rates of the birds in these treatments. Mentioned [20] that when wheat bran was fermented by the fungus *Laetiporus sulphureus*, the availability of nutrients increased, and their use was highly efficient in broilers, as this was reflected in the efficiency of feed conversion rates . Our results are in agreement with finding of [23] and with [7].

Table (5): Effect of partial replacement of raw wheat bran and treatment in for wheat on mortality rate, production index and economic directory of broilers (mean ± standard error)

Treatments	Mortality rate	Economic indicator	Production index
T1	2.22±8.89	^{ab}12.41±291.76	^{ab}12.41±291.76
T2	2.22±2.22	^{abcd}9.71±244.45	^{abcd}9.71±244.45
T3	2.22±2.22	^{bcd}15.30±235.24	^{bcd}15.30±235.24
T4	4.44±4.44	^{abcd}22.72±267.23	^{abcd}22.72±267.23
T5	2.22±2.22	^{cd}12.19±232.63	^{cd}12.19±232.63
T6	0.00+0.00	^{ab}17.50±292.14	^{ab}17.50±292.14
T7	2.22±8.89	^{d}21.43±211.65	^{d}21.43±211.65
T8	2.22±4.44	^{a}26.24±301.57	^{a}26.24±301.57
T9	5.87±8.89	^{abc}7.95±268.92	^{abc}7.95±268.92
level of significant	N.S	*	*

T1: The control group was free of rice bran, T2: the replacement of raw rice bran at 25%, T3: the raw rice bran at 50%, T4: the replacement for rice bran treated with HCL at 25%, T5: the replacement for rice bran treated with HCL at 50 % , T6: Replacement of rice bran treated with bakery yeast (*Saccharomyces cerevisiae*) at 25%, T7: Replacement of rice bran treated with yeast of bakery yeast(*Saccharomyces cerevisiae*) 50%, T8: Replacement of rice bran treated with 25% ascorbic acid, T9: Replacement of rice bran treated with ascorbic acid at 50%:, The averages carrying different letters within the same column differ significantly between them . * There are significant differences at the 0.05 .
Non - significant : N.S: It means that there are no significant differences between the means.

There were no significant differences in the dressing percentage (table 4) between the different replacement treatments, and between the control treatment in the experimental one. that agreed with the findings of [23 and 24].There were no significant differences in the relative weight of the breast for all treatments. This agreed with the results of [25], as well as the results of [24 , 26 and 7].

Table (5) showed that there were no significant differences in the mortality for the treatments of experimental birds during the 42-day rearing period .there were significant differences between the replacement treatments, as the treatment of wheat bran treated with ascorbic acid 25% for wheat record significant increase ($P < 0.05$) compare with T3, T5, and T7, and it did not differ significantly from T6 and control treatment T1 in economic indicator and production index.

Wheat bran contains many water-soluble vitamins, including the B-complex group of vitamins and minerals (such as calcium, phosphorous, etc.), and these elements are essential in many vital activities [27]. It also contains many amino acids (lysine, glycine, aspartic acid, alanine, arginine) more than their presence in flour [28 and 29]. It also contains Alkylresorcinols, one of the antioxidants found in wheat bran [30], The effects of these elements may be on the substitution

coefficients of wheat bran, and then this effect is reflected on the production indicators.

Improving the nutritional value of wheat bran treated with baking yeast (*Saccharomyces cerevisiae*) and ascorbic acid. This was reflected by substituting wheat for 25% on live body weight, as well as cumulative weight gain, as the alternative treatments did not differ with the comparison treatment. As well as most of the alternative treatments got a significant improvement in the feed conversion ratio , and then these treatments can be used economically and productively without having a negative impact on the performance of the broilers.

Acknowledgments

We extend our acknowledgements to the Directorate of Agriculture of Dhi Qar, Department of Livestock Services, for their assistance in completing this study.

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