



EFFECT OF ADDING POMEGRANATE (*PUNICA GRANATUM*) HUSKS AND HARMALA (*PEGANUM HARMALA*) AT FIXED RATES TO FEED ON THE PRODUCTIVE QUALITIES AND TREATMENT OF DIARRHEA FOR CHICKEN MEAT

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Abstract

The current study was conducted to investigate the effect of the powder of the harmala (*Peganum harmala*) plant and the pomegranate (*Punica granatum*) peel powder on the treatment of the chicken meat with diarrhea and on the increase of the weight of the chicken when used in the feed. The study was conducted on a sample of 100 meat chicken, five weeks old, divided into four equal groups, each of which included 25 chicken for the purpose of studying the effect of the use of the above powders, with the feed on the weight increase, where the feeding of the chicken in the first group on the diet does not contain any addition, while the second group was fed on a diet containing camel powder of 10 g for 10 kg of the feed for the same kind of feed for the treatment Guardian. The third treatment was fed with pomegranate husk powder 10 g / 10 kg feed of the same feed quality for the first and second treatments. The fourth treatment was fed on a diet containing pomegranate husk powder and harmala powder 5 g / 5 g / 10 kg feed of the same feed type provided for the first, second and third treatments. While four groups of chickens with diarrhea were used at the age of five weeks and each group consisted of ten chickens. The first group was considered control and the second treatment was used for the second group, the third treatment for the third group and the fourth treatment for the fourth group for one week. The results showed that the use of camel powder with the diet achieved the best increase in weight of the chicken followed by the use of pomegranate husk powder in the bush individually, while the use of a mixture of above powders in the blackberry ranked last in the weight increase of chickens. The results showed that all the chickens were killed in the first group, while 30% of the chickens were cured when using the harmala powder alone and 50% when the pomegranate powder was used individually in the diet and 60% when using a mixture of both the harmala and pomegranate peel powders together.

Key words : Weight gain, Pomegranate peel, Pomegranate powder, Chicken meat, Diarrheal disease.

Introduction

The poultry industry is one of the main pillars of the economy of many countries of the world because it contributes effectively to agricultural production and the production of high-quality food such as meat and eggs, which are one of the main sources of animal protein, which enters the human diet as well as the speed of the cycle of capital. The studies have indicated that the natural products of plant extracts, which can be used for the duration of breeding and the need to estimate their residues in poultry products and their effect on public health, are considered to be the most important plant products. It contains essential and non-essential amino

acids, fatty acids, proteins, vitamins and minerals (Zarfeshany *et al.*, 2014). The round pomegranate fruit and many seeds are delicious fruits consumed and consumed all over the world and are exported to Iran, Afghanistan, China and India, then moved from Iran to the Mediterranean countries and the Turkish borders of Europe and the Southwest of the US, California and Mexico (Ismail *et al.*, 2012). Pomegranate (*Punica granatum*) contains many antioxidants (Al-muammar and Khan, 2012). Pomegranate peel, which accounts for 26% to 30% of the weight of the fruit, contains large amounts of antioxidants, such as bitter Phenolic compounds such as flavonoids (anthocyanins, catechins and other

flavonoids) as well as tannins (punicalin), pedunculagin, punicalagin, gallic acid) and the thelyic acid. These substances are concentrated in pomegranate peel and pomegranate juice and represent about 92% of the antioxidants found in this fruit (Ismail *et al.*, 2012). Pomegranate husks, most of which are disposed of, contain much more antioxidants than pulp. Therefore, Pomegranate peel extract which will be more useful than the pomegranate pulp extract itself (Li *et al.*, 2006). The dried pomegranate peel after boiling with water for 15 minutes in the treatment of the bird suffering from diarrhea (Sayed, 2016). Harmala is a herbaceous plant that includes two types of white and the Arab and red, which is the common and has leaves such as willow leaves and round and white flower sowing black as heavy mustard and classified into eukaryotes Kingdom of plants Propagation plant uses the palm tree since ancient times and has a long history in the uses and uses of the camel back to the era of the Greeks, where used seed powder in the treatment of tapeworms and has a long history in traditional Arabic medicine where the herb is dipped in water and the ointment used in the case S sore throat and throat in the form of gargling and has several other uses and that the owner of the red grain plant which has a taste of the wonderful delicious has many benefits, which have much oblivious to it because it contains vitamins and minerals that respect it and also antioxidants and thus be justified in comparison of many diseases (Sayed, 2016). Treatment of ulcerative colitis Ulcerative colitis is an inflammatory condition and ulcers that affect the mucous layer of the colon. Symptoms include anal bleeding, diarrhea, pain at the exit, and abdominal pain, a disease characterized by non-continuous inflammation, that is, symptoms can calm down and then break down again, it needs lifelong treatment, and many people with this disease resort to alternative therapies. Pomegranate peel was popularly used to treat many cases such as infections, infections, diarrhea and ulcers. One study examined the effect of the pomegranate peel extract on the symptoms of ulcerative colitis. Patients were given 6 grams of dry pomegranate peel daily and compared with a group of patients. The placebo was found to have improved the health of patients and reduced their need for diarrheal drugs (Kamali *et al.*, 2017). Resistance to inflammation There are many scientific evidence that indicate the role of pomegranate extract in the fight against infections and sensitivities, where many of its components inhibit the secretion of nitric oxide and prostaglandin 2 and thus prevent the formation of proteins responsible for the inflammatory situation, (Ismail *et al.*, 2012) and found one of the studies effective role of

pomegranate crusts In reducing the secretion of cytokines responsible for inflammation in the body (Harzallah *et al.* 2016). In one study, pomegranate extract found positive effects in the treatment of malaria induced anemia, and found a positive role in protecting liver cells from damage caused by this disease (Hafiz *et al.* 2015). Treatment of Osteoporosis Some research suggests a role for pomegranate crusts in bone health and the ability of these shells and their antioxidants to fight osteoporosis due to the role of oxidative stress in this disease. For this purpose one study found the ability of pomegranate peel extract to reduce Loss of bone density and loss of minerals, as well as found to be able to stimulate bone building in the rats of experiments to stimulate osteoporosis (Spilmont *et al.* 2016), (Aslam *et al.* 2006). Uses of Pomegranate is particularly important to Muslims, as it is mentioned in the Holy Quran in three places (Watson *et al.* 2010) and has been used in folk medicine for centuries. (Li *et al.* 2006). It is also used in traditional Indian medicine to treat many conditions, such as: diarrhea, intestinal worms, nasal bleeding, ulcers, and is popularly boiled in crusts Pomegranate from 10 to 40 minutes to obtain its water extract, it is also used externally for the aroma C. Bleeding of gums and gums, 5 g-10 g of ground pomegranate peel 2 to 3 per day is used to treat gastric acidity (Ismail *et al.* 2012) and some use it to strengthen gums, treat mouth ulcers and bladder disorders (George *et al.* 2003). Side effects of pomegranate peel and its damage due to the widespread use of pomegranate husks and their extracts and their entry into the manufacture of dietary supplements, caution should be taken from consuming large quantities. It is rich in plant phytochemicals, which can cause toxicity if eaten at high concentrations or permanently. One study found that the lethal middle dose (ie, which kills 50% of the experimental animals) of the pomegranate extract rats was higher than 5 g / kg body weight, while another study found that the maximum intake of pomegranate extract before producing side effects in consumption Pain Pass (90 days) is 600 mg per kg of body weight in rats experiments. A study of no human side effects after consumption of 1420 mg / day of phenolic compounds supported by iglitanin (a compound found in pomegranate husks) was found for 28 days. A recent study has examined the toxicity of the pomegranate extract completely on the genes and found that it produces toxicity only when taken in quantities greater than 70 mg / kg of pomegranate extract, Kg of body weight, so be careful to take it in large quantities (Ismail *et al.* 2012). Some people are allergic to pomegranate show symptoms as any other type of food sensitivities (Li *et al.* 2006). The aims of the present study

include investigate the effect of the powder of the camel plant and the pomegranate peel powder on the treatment of the chicken meat with diarrhea and on the increase of the weight of the chicken when used in the feed.

Chemical composition of pomegranate

Pomegranate is characterized by having a good amount of potassium (100 g/mg 259.0) and contains a large amount of water (about 81% of the weight of the fruit), which contains a good amount of sugars (about 13.70 g/100 g). Fructose and sucrose, making it a good source of water and fast energy. Despite the small amount of fat in pomegranate, which is concentrated in the seeds and make up 12 to 20% of its weight, but it has a high health and therapeutic value because it contains many useful compounds dissolved in fats such as sterols and plant steroid. As indicated by scientific studies, Pomegranate also contains dietary fiber. It contains about 30 compounds, including Polyphenols, Anthocyanidins, Tannins and Flavonoids, as well as many organic acids such as Fumaric, Acetic, Malaric, Tartaric and Ellagic (Rahimi *et al.*, 2012). Pomegranate peel and pomegranate peel powder as shown in figs. 1 and 2.

Chemical composition of the harmala

An extensive study was carried out to study the chemical components of the leaves and roots of the plant. The scientists isolated and described many important chemicals, which include different types of alkaloids, and found different types of flavonoids, glycosides and tannins. The biological of the plant of the palm tree depends on the actions of these different chemical components and perhaps the bitterness of the taste of the leaves of the camel comes as a result of the presence of alkaloids (Jinous and Fereshteh, 2012), Hemline (harmalin), Haramain and Harmons. In total, about 4% of the weight of the dry seeds, and the two mills represent this amount. The flowers and leg of the plant also contain kalawani. The harmala plant and harmala powder are shown in figs. 3 and 4.

Materials and methods of work

Preparation of pomegranate husk powder

A quantity of pomegranate husks were collected from the local markets in Mahaweel city and cleaned from the suspended materials by washing and drying them, then grinding using the electric grinder until a fine powder of 200 g of powder was obtained and placed in a 1000 ml volumetric flask. Gram was completely cleaned of impurities.

Room configuration

The hall was equipped with all the conditions and

requirements needed by the bird before the introduction of the meal where the waste of the previous meal from the hall, wash the hall twice and then cleaned after that and then washed the room again sterile materials and then left to dry and then the transaction was made using Nylon purchased from the local markets, was provided feed dishes and hymns, some of which were bought and borrowed others and was also borrowed three cages composed of each cage of three rooms and at a height of 200 cm was placed sawdust that the room was opened with iodine. The next day the vacuum fan was opened in the hall and the hall was opened for 2 days to get rid of all the side effects. A small pellet of formalin was also placed to sterilize the feet before entering.

Preparation of the meal

A third commercial feed was used from the green feed company located in Mahaweel. The feed quantity was divided into four equal quantities. The first quantity was mixed with 10 grams of pomegranate powder with 10 kg feed. The second quantity was mixed with 10 g of sand with 10 kg Feed and the third group 5 g of pomegranate husks and 5 g of marmalade were mixed together in 10 kg feed. The fourth group did not add anything to it only after feeding and after the mixing of the feed was completed and the birds were fed to them according to the amount of feed estimated per week.

Birds of experience

In the study, 100 chickens of the five-week-old Heberal Diyala were brought from the Jafrawi hatch in Babylon. Divide the meat broiler evenly into four equal groups with 25 chicken per treatment. Feeding the chicken in the first treatment on a diet does not contain any addition, while the second group is fed on a diet containing pomegranate peel powder 10 g/10 kg feed of the same quality of feed provided for the first treatment. The third treatment was fed on 10 kg/10 kg rye powder with the same feed quality for the first and second treatments. The fourth treatment was fed on a diet containing pomegranate husk powder and 5 g/ 5 g/ 10 kg feed of the same feed quality presented for the first, second and third treatments.

Preventive program

Meat breeds were given vaccines against Newcastle disease through drinking water. Vitamin C was given the next day of the Newcastle vaccine for one day. The weight of the meat broiler at the end of each week from the start of the experiment until the sixth week and calculated the quantities of feed consumed by the meat breeder in each transaction was calculated and the coefficient of conversion of feed for each transaction

and only.

The equation:

Food conversion coefficient = Amount of feed consumed / Weight increase.

Results and Discussion

The results indicate that the weight and weight increase in the use of camel and pomegranate scales has increased the weight of pomegranate peel with the palm and also of nature due to the ability of sand and pomegranate scales to improve the ability of birds to resist disease and nutrition well.

It is clear from table 1 that the use of pomegranate and pomegranate in the diet has an effect on the weight of the body weekly, in the first week, the fourth treatment is the use of a mixture of palm and pomegranate scales the highest body weight (2600 g) and the second and third transactions, and pomegranate husks only at 2500 g and 1850 g, respectively. The first treatment (control) was at the lowest weight (1250 g). In the second week, the results showed that the body weight of the second treatment (2750 g) and the fourth (2730 g) were significantly higher than the other treatments, especially the first treatment (1250 g). The second treatment achieved the highest body weight and reached (3000 g) at the third week of the experiment. The third and fourth treatments recorded a weight of 2500 g. The first treatment recorded the lowest weight and reached 1350 g. In the fourth week, the average body weight for the second treatment (3250 g) was significantly higher on all the treatments, which had a lower body weight, especially the first treatment of 1500 grams. Results for the fifth week showed an increase in the body weight of the second treatment (3500 g) while the first treatment recorded the lowest weight (1250 g). Finally, the results of the sixth week of the experiment showed a clear superiority of body weight of the second treatment by (3750 g), while the first treatment lowest body weight and reached (1350 g). The superiority of the body weight during the six weeks of chicken age in the second treatment, which included mixing 10 g of the camel with 10 kg of feed followed by the third treatment, which included mixing 10 g of pomegranate husk powder with 10 kg of feed and then the fourth treatment, which included Mixing 5 grams of rye with 5 grams of pomegranate powder with 10 kg of feed. Finally, the first treatment, which included only feed, is due to the fact that the camel contains important chemicals, which include various types of alkaloids such as flavinoids, glycosides and tannins. Contains useful vehicles saturated fats such as sterols and plant steroids. Pomegranate also contains

dietary fiber. It contains about 30 compounds, including Polyphenols, Anthocyanidins, Tannins and Flavonoids as well as many organic acids such as Fumaric, Acetic, Malaric, Tartaric and Ellagic.

Table 2 shows that the use of pomegranate and pomegranate in the diet has an effect on the rate of weekly increase in weight, where it reached the highest rate of increase of weight for the first week (500 g) in the application of the second treatment while the first treatment (control) Cloud). The rate of increase for the second week recorded the highest value of (250 g) at the second treatment and the lowest value of (0) at the first treatment. In the third week, the third treatment achieved the highest rate of increase in weight by (500 g), while the fourth treatment recorded by (-230 g). Results showed that the second treatment recorded the highest rate of increase of weight (250 g) at the fourth week, while the fourth treatment the lowest value (-250 g). In the fifth week, the third treatment achieved the highest increase in weight by (350 g) while the first treatment achieved the lowest value by (-250 g). Finally, in the sixth week, the highest value of the increase in the weight of the third treatment was recorded (500 g), while the first transaction was the lowest value by 100 g. It is clear from table 2 that the second treatment recorded the highest rates of cumulative weight increases from the

Table 1: The weight of the body weekly (gram).

Weeks	Control	Sandal powder	Pomegranate peel powder	Rues powder and pomegranate peel
The first	1250	2500	1850	2600
The second	1250	2750	2000	2730
The third	1350	3000	2500	2500
The fourth	1500	3250	2650	2250
Fifth	1250	3500	3000	2500
Sixth	1350	3750	3250	3000

Table 2 : The rate of weekly increase in weigh.

Weeks	Control (g)	Sandal powder (g)	Pomegranate peel powder (g)	Rues powder and pomegranate peel (g)
The first	0	500	100	100
The second	0	250	150	130
The third	50	250	500	-230
The fourth	150	250	100	-250
Fifth	-250	250	350	250
Sixth	100	250	250	500
Total	50	1750	1450	980



Fig. 1 : Pomegranate peel.



Fig. 2 : Pomegranate peel powder.

Table 3 : The quantities of feed consumed.

Weeks	Control (g chicken)	Sandal powder (g chicken)	Pomegranate peel powder (g chicken)	Rues powder and pomeg- ranate peel (g chicken)
The first	800	650	550	600
The second	900	700	650	625
The third	1200	750	725	700
The fourth	1300	800	750	750
Fifth	1400	900	850	850
Sixth	1700	1000	900	950
Total	7300	4800	4425	4475

Table 4 : The food conversion coefficient.

Weeks	Control	Sandal powder	Pomeg- ranate peel powder	Rues powder and pomeg- ranate peel
The first	-	1.3	5.5	6
The second	-	2.8	4.3	4.8
The third	24	3	14.5	3
The fourth	8.66	3.2	7.3	3
Fifth	-	3.6	2.37	3.4
Sixth	17	4	3.6	1.9
Total	8.27	2.983333	6.261667	3.683333

Table 5 : The components of the feeding.

Feeding materials	Percentage (%)
Yellow corn	37,5
Wheat	28,5
Soybean Meal	16
Animal protein center	10
Limestone (calcium carbonate)	7,7
Salt	0,3
Total	100

first week to the sixth week and amounted to (1750 g) followed by the treatment of the third and fourth by (1450 g) and (980 g), respectively due to the effect of acids and minerals in the powder Hrem and pomegranate husks.

Table 3 shows the difference in the quantities of feed consumed for the weeks of the studied experiment. It was highly significant according to the different experimental treatments. The first treatment recorded the highest amount of accumulated consumption feed from the first week to the end of the sixth week at a value of 7300 g/chicken, which was 4,800 g/chicken. The third treatment recorded the amount of feed consumed by 4475 g/chicken. The fourth treatment recorded the amount of feed consumed by 4425 g/chicken. The decline in the rate of consumption of fodder in the second, third and fourth transactions is due to the chicken in these transactions have taken enough of the amino acids and fatty acids and minerals and vitamins in the palm and pomegranate scales.

Table 4 shows that the difference in the food conversion coefficient was significantly significant according to the studied parameters and for all the weeks of the experiment, including the cumulative ones, where the best level of the food conversion coefficient in the second treatment was (1.3). To the sixth week of the experiment, the second treatment achieved the best coefficient of food conversion of 2.98, while the fourth treatment coefficient of food conversion by 3.68, while the third treatment coefficient of cumulative food conversion of 6.26. The coefficient of food conversion is a measure of the amount of feed utilization and its conversion to live weight. The improvement in the food conversion coefficient of chicken in the second, third, and fourth plants, which contained the powder on the sand and pomegranate husks, is due to the beneficial effect of these powders.

Table 5 shows the length of the broiler used for the period of breeding of the chickens, which was formed from the yellow corn by 37.5%, the wheat by 28.5% while the proportion of soybeans is 16% and the



Fig. 3 : Harmala plant.



Fig. 4 : Harmala plant powder.

Table 6 : The effect of the transactions on the health status of chickens.

Treatment	Using Chicken	Healthy Chicken	Percentage (%)
Control	10	0	0
Sandal powder	10	3	30
Pomegranate peel powder	10	5	50
Rues powder and pomegranate peel	10	6	60

percentage of animal protein center was 10% while the proportion of calcium carbonate 7.7% and later The salt content was 0.3%.

Table 6 shows the effect of the second, third and fourth transactions on the health status of chickens, where four groups of chickens were used diarrhea and formed each group of ten chickens. The first group was controlled

and the second treatment was used for the second group and the third treatment for the third group and the fourth treatment for the fourth group for a week. The results showed that all the chickens were killed in the first group (control), while three chickens from the second group were cured which represented 30%, five chickens from the third group were cured which represented 50% and six chickens from the fourth group accounted for 60%. The reason for the healing of chickens is due to the use of sandalwood powder and pomegranate in the treatment of diarrhea in chickens..

Conclusion

Based on the results obtained from the current study, the conclusions as the following:

1. the second treatment recorded the highest rates of cumulative weight increases from the first week to the sixth week and amounted to (1750 g) followed

by the treatment of the third and fourth by (1450 g) and (980 g), respectively

2. The best food conversion coefficient of chickens is 2.98 which occurs in the second treatment
3. The effect of using pomegranate peel powder and rumen powder together is best in treating diarrhea in chickens
4. The effect of using pomegranate husk powder and rye powder alone is second and third respectively in treating diarrhea in chickens.

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