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RESEARCH ARTICLE

Effects of two dose of pomegranate peels powder on some physiological characteristic and Estrogen level in the shami goat in iraq

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Abstract

Current research studied the effect of two different dose of pomegranate peels powder 15 mg and w30 mg / week / head / on shami goat in iraq, with age 2 years and for the period from 12 -April - 2015 to 27-may – 2015.

Nine of shami goat in iraq divided randomly into three groups, as follows: control group which given tap water, second group given 15 mg/ week/ head and the third group given 30 mg/ week / head .

Blood sample collected for measuring the concentration of Hemoglobin, and calculate the total number of red blood cells RBCs, and white blood cells WBCs.

The weights of the three experimental groups measured at the start of the experiment and at the end of the experiment by scales used for large animals.

The results show a significant increase ($p < 0.05$) found in weight at the five week of the experiment. While there is no significant differences in the characteristics of blood, the study measured; (hemoglobin, RBCs number, WBCs number), while the level of Estrogen measurement end of the experiment. The second groups exceeded significantly ($p < 0.05$) in level of estrogen 16.34 ± 2.98 (pg/ml).

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Introduction:-

The pomegranate is equatorial and subtropical fruit, which divided into three portions; seeds, which represent 3%, the juice 30%, and the remaining flash and peels represent 67% from the total weight of the fruit.(1)

Pomegranate broadly wasted in the world, especially as pomegranate juice and pomegranate water metier, where it leads to the collection of large amounts of peels (2) This consider as a waste due to the value of these peels because they include compound act as an antioxidant, anti-inflammatory and prevailing cancer(3).

The pomegranate is a good source of Tannin, flavonoids and phenolic compounds Tannin is the main ingredient of the peels by 25-28%) (4, 5).

Al Dujaili (2) Showed that the use of pomegranate peel by 20% in fattening calves have no adversely effect on the digestive execution of the calves. and increased feed control exhaustion rate and thus increase body weight, and this is due to the role of tannin as well the efficiency of production in ruminants by increasing passage of the non-ammonia nitrogen and essential amino acids from the rumen and improve soy nitrogen fermenting in the rumen (6). And it found that presenting fresh pomegranate peel led to the increase in the level of α -tocopherol in the blood plasma of calves and improved feed intake and increase the final weight due to that pomegranate peel contain high antioxidants substance (7).

Materials and Methods:-

This experiment was conducted in the Research Faculty of Agriculture field \ animal resource department \ University of Kufa for the period from 12 -April - 2015 to 27-may - 2015.

The experiment carried out on nine of shami goat in Iraq, with age ranging 24 month. weights average of the three groups 33.33 -34.80 kg respectively at the start of the experiment, these goat were divided randomly into three equal groups by weight 3 goat /group. the first group is considered as control which given which given tap water and the second group were given pomegranate peel powder solution second group given 15 mg/ week / head, and the third group given 30 mg/ week / head. The weights of the three experimental groups measured at the start of the experiment and at the end of the experiment by scales used for large animals.

The blood collection once every two weeks. At eight o'clock in the morning. from the jugular vein and empties in tube containing EDTA (Tetra Acetic Acid) for measuring the concentration of hemoglobin, and calculate the total number of red blood cells RBCs, and white blood WBCs analyzed blood samples using veterinary blood analysis device of the type GENEX for the duration of the experiment.

Estrogen hormone assay use the method mentioned by (Breuer et al 1976)

Plant collection:-

Peels collected and dry at room temperature then powdered and dissolved in a half liter of water and submitted to the two treatment group the second and the third, orally by raising the ram head slightly upwards and opened his mouth using the Mouth speculum pouring material inside and wait to ensure the process of consumption is done.

The experimental rams groups put for the duration of the experiment in the half-open barn with an area of 800-m² Theater. They have been subjected to same environmental and nutritional one conditions, the feed concentration submitted by 2% of living body weight, and in a mass nutrition and in equal two meals in the morning at seven o'clock and in Evening and at four o'clock. Protein ratio was 14% in the feed, and it was composed of 35% wheat bran, 37% barley, 20% Yellow corn, 5% SBM, 2% limestone and 1% salt. Alfa Alfa hay provided ad libitum. As for drinking water and mineral salts, templates were available to the animals for the duration of the experiment.

The weights of the three experimental groups measured at the start of the experiment and at the end of the experiment by scales used for large animals.

The blood collection once every two weeks. At eight o'clock in the morning. from the jugular vein and empties in tube containing EDTA (Tetra Acetic Acid) for measuring the concentration of hemoglobin, and calculate the total number of red blood cells RBCs, and white blood WBCs analyzed blood samples using veterinary blood analysis device of the type GENEX for the duration of the experiment.

Chemical Composition of Pomegranate Peel:-

The result of Ullah et al (2012) analysis from pomegranate peel powder showed that the moisture content ($04 \pm 0.22\%$), ash ($05 \pm 0.14\%$), fat ($9.4 \pm 0.1\%$), acidity ($4.86 \pm 0.5\%$), crude fiber ($21 \pm 0.6\%$), Total sugar ($31.38 \pm 0.3\%$), Reducing Sugar ($30.40 \pm 0.11\%$), Non-Reducing sugar ($0.98 \pm 0.12\%$) and Protein were ($8.719 \pm 0.10\%$).

Statistical analysis:-

Statistical analysis was performed by using Ready program SPSS (8).

Results and discussion:-

1. Productive characteristic:

Goat Weights:

The table (1) show the effects of pomegranate peels powder solution on the body weight (kg) with goat, there is a significant increase ($p < 0.05$) in the fourth week in a 15 gm group compared to control. and found a significant increase ($p < 0.05$), in the weight gain of 15 gm group compared to the control group, and 30 gm. This positive result might show that the low amounts of pomegranate peel therefore tannin, could lead to an improvement in the

efficiency of the animal represented an improvement to benefit from the digestion of food because of the protective effect of the hydrolyzed protein in the rumen (9).

Table (1) the effects of pomegranate peels powder solution on the body weight (kg) with Goat.

Weeks	Control	15 gm	30gm
1 st	34.00 1.51±	33.66 1.96±	33.33 1.28±
2 nd	37.33 2.23± B	42.33 1.84± A	39.00. 2.35± Ab
Weight gain	7.33 2.40± B	13.34 2.05± A	8.62 1.96± B

- Mean± SE
- Small litter due to different between groups (p<0.05)

2- Total blood characteristic:-

The table (2), (3), and (4) show the effects of the use of pomegranate peels powder solution on the hemoglobin concentration, red blood cells and white blood cells number. there is no significant (p<0.05) differences in the concentration of hemoglobin (Hb), and the average number of red blood cells (RBCc), and the average number of white blood cells (WBCc). for the both group of treatments compared with control and the reason of the lack of significant difference may cause by the total improvement of the animals during the experiment period with control treatment, we find that pomegranate peel powder solution did not adversely affect the standards of this blood characteristics and kept it within the normal level (10).

3- Estrogen Parameters:-

The table (5) show the effects of the use of pomegranate peels powder solution on the level of estrogen hormone, there is significant (p<0.05) increased in treatment(2) 16.34±2.98 (pg/ml) but the other group no significant (p<0.05) differences in the concentration of estrogen this my be due to the fact that pomegranate peel contains antioxidants and vitamin works to prevent the formation of free radicals(15,16)

Table (2) the effects of pomegranate peels powder solution at the rate of hemoglobin (Hb) concentration in goat (g /100 ml³).

Weeks	control	15 gm	30 gm
1 st	9.08.±53	9.86. 0.33±	9.80. 0.±52
2 nd	8.91 ±41	9.50 .±50	9.16. ±1.21
4 th	8.96 ±1.01	9.63 ±1.33	9..80 0.86±
6 th	8.93 0.46±	9.40 ±1.10	9.60. ±1.20

- Mean± SE

Table (3) the effects of the use of pomegranate peel powder solution on the average number of red blood cells (RBCc) the goat (Cell x10³ / MI³)

Weeks	control	15 gm	30 gm
1 st	3.5 ±0.85	4.1 ±1.18	4.9 ±1.21
2 nd	4.23 0.67±	4.98 0.76±	4.81 0.63±
4 th	4.32 ±1.14	5.13 ±0.74	4.89 0.84±
6 th	3.35 0.99±	4.89 0.90±	4.18 0.±89

- Mean± SE

Table (4) the effects of pomegranate peel powder solution on the average number of white blood cells (WBCc) the goat (Cell x10³ / MI³).

Weeks	control	15 gm	30 gm
1 st	7.86 1.22±	11.90 5.02±	12.00 0.96±
2 nd	14.53 6.11±	20.46 0.26±	20.56 0.03±
4 th	20.43 0.16±	20.60 0.17±	20.40 0.26±
6 th	11.90 2.78±	10.36 3.63±	8.55 1.98±

- Mean± SE

Table (5) the effects of pomegranate peel powder solution on the level of estrogen hormone in the goat (pg/ml)

Weeks	control	15 gm	30 gm
1	14.32±3.12	14.82±3.56a	13.89±3.12
6 th	15.82±2.56	16.34±2.98b	15.12±3.76

- Mean± SE

- Small litter due to different between groups (p<0.05)

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