EFFECT OF ADDITION DIFFERENT LEVELS OF LEAVES OLIVES POWDER TO FOOD ON SOME BIOCHMICAL BLOOD PARAMETERS IN ARABI MALE LAMBS

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Abstract:

This study was conducted in animal field of College of Agriculture, Basrah University Twelve Arabia male lambs aged eight months and weighed 23-24kg were randomly selected and divided into three groups; (four lambs for each group). Control treatment (T1) The lambs were fed on fodder composed of 350gm barley, 150gm wheat bran, and 250gm and dry alfalfa. Second treatment (T2) Olive leaf powder was added to the control diet in an amount of 25g/animal/d and in the third treatment (T3) Olive leaves powder was added in an amount of 50g/animal/d to control diet. Experiment were continued for 90day.The results of study showed that were a significant increase ($p<0.05$) in concentrations of total protein and albumin inT2 and T3 treatments at second and third months of experiment .While, there were significant decrease($p< 0.05$)in glucose, cholesterol and triglycerides concentrations in T2 andT3 treatments at all months of experiment. GOT,GPT enzymes concentrations were decreased significantly($p<0.05$)inT2 andT3. The concentration of gonadotropin hormones (LH, FSH) in T2 and T3 treatments increased significantly ($p<0.05$) throughout the experiment.

Key words: Olives, biochemical parameters, gonadotropin hormones, lambs.

Introduction:

Use medicinal plants as feed for field animal production to provide food needs for animals and improve productivity, physiological and immunological qualities, (6,23,24). In addition, the oil extracted from it is used for medical purposes, such as treating fever (36). Because of its production of amino acids necessary for eliminating pathogens by preventing the formation of essential amino acids or melting cell membranes (Perrinjaquet, 29). In addition, the oil extracted from it used For medical purposes Such as treating fever (36).Because of its production Amino acids necessary for elimination on at pathogens by preventing the formation of essential amino acids or melt cell membrane (Perrinjaquet, 29). It also prevents the virus from producing fibrocin and stimulating immune response and ingestion of pathogenic microorganisms in particular Lactobacilli and Staphylococcus by preparation the body with acid Linoleic compounds flavonoids Kendall (17,40). In the field of ruminant nutrition, olive leaves have been used as animal feed or as a growth regulator by Delgado (10,39,44). By increasing the efficiency of microbial protein formation in the rumen of Molina (22) and making it digestible, feed conversion efficiency can be improved, which will positively impact the animal's performance

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and weight (2,26,32). Olive leaves contain sugars, resins, saponins, and alkaloids, in addition to high concentrations of flavonoids and phenolic substances, and Oleuropein, the most important of which, is estimated to be 0.005-0.12% and 1-14% in olive oil and leaves, respectively, (16,35). It also contains quantities of fatty acids, the most important of which are oleic acid, linolenic acid, and palmitic acid, and high concentrations of mineral elements, the most important of which are calcium, sodium, magnesium, and potassium. (7). The leaves olives is consumed by cattle or sheep 1.5-1 kg/day of green leaves and 1-0.8 kg/day of dried leaves per 100 kg of body weight, (13). In spite of, agriculture trees Olives are widely used in Iraq for producing fruits and as an ornamental tree, but the information available about the use of olive leaves in feeding ruminants is very limit, therefore, the current study aimed to investigate the effect of using olive leaves on some biochemical parameters represented by the concentrations of total protein, albumin, glucose, cholesterol, triglycerides, and enzymes GOT and GPT, as well as the gonadal hormones FSH and LH .

Materials and methods:

This study was conducted in the animal field at the College of Agriculture, University of Basrah. 12 Arab lambs, eight months old and weights ranging from 24-23kg.The lambs were randomly divided into three groups, with four lambs for each group .The animals in control group (T1) were fed on 350gm barley,150gm wheat bran, and250gm dry alfalfa for 90 days. In the second group (T2) olive leaves powder was added (the olive leaves were taken, dried, and then ground with an electric grinding machine) to the control diet at an amount of 25gm/ animal/day, and in the third group (T3), olive leaves powder was added at an amount of 50g/animal/day to the control diet, in addition to the availability of mineral salt blocks and drinking water freely in the barns.

Laboratory analyses

After drawing blood samples from the jugular vein using 10ml medical syringes, 6ml of blood was placed in heparin-free tubes. Use the centrifuge at a speed of 3000 rpm for 15minutes to extract the serum, then put the serum in sterile tubes and store it in the freezer at a temperature of(-20) Co and method adopted (41). In estimating the concentration of total protein in blood serum, using a laboratory diagnostic kit provided by the company Swedish Spectrum. The albumin concentration was estimated according to the Varley method (43,18) using a laboratory diagnostic kit supplied by British Randox. A laboratory diagnostic kit prepared by Biomaghreb in France was used to estimate the concentrations of glucose and triglycerides. As for the estimation of cholesterol concentration and enzyme concentration, GOT and GPT were used in a laboratory diagnostic kit prepared by the French company Biolabo, SA. By method (12). As for the hormones concentration (Luteinizing hormone LH, Follicle stimulating hormone FSH), they were measured according to the work steps described in the measurement kit prepared by the German company Biochemuce. SPPS program was used to analyze the data, and significant differences were tested at the probability level ($p<0.05$.(

Results And Discussion:

Table (1) appears that the second and third treatments are significantly higher ($p<0.05$)in the concentration of total protein and albumin during the second and third months compared

to the control treatment, as the averages reached 5.05,5.87,5.94 and 5.15,6.11,6.18 g/100 ml for total protein and 2.54,3.43, 3.33 and 2.23,3.72,3.35 g/100 ml for albums, respectively. It may be attributed the due to the high nutritional value for olive leaves it contains (10.1-10.9)% crude protein (15,22) and included large quantities of amino acids, especially proline, alanine, valine, glycine, and others Martin (19). This is reflected in an increase configuration and passage microbial protein to the small intestine (22). The increase in albumin concentration may be a result of an increase in total protein, which is composed of albumin and globulin. Albumin constitutes 60%,while globulin constitutes 40% of plasma protein (18,26). These results agree with what was indicated (1,10). While disagreeing with 3 and 7, who did not notice a difference in the concentration of total protein and albumin when fed olive leaf powder to local goats. In the same table, it was observed that the glucose concentration in the control group increased significantly ($p<0.05$) during the first, second, and third months, compared to the second and third treatments. The reason may be attributed to a role of flavonoids, the most important of which are Oleuropeoside, available high percentage in olive leaves and which activates the secretion of the hormone insulin from the pancreas ,which in turn increases the entry of blood glucose into the tissue cells of the body, leading to a decrease in glucose in the bloodstream Gonzalez (14,33). These results were not consistent with those indicated by (5), who did not notice a difference in glucose concentration when adding olive leaves powder to local goat feed

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Table 1. effect of adding different levels of olive leaves powder to feed in total protein and albumin concentrations (g/100ml) (Mean ±SE.).

Treatment / Periods	Total protein			Albumin			Glucose		
	T1	T2	T3	T1	T2	T3	T1	T2	T3
First Mo.	5.20± 0.12	5.70± 0.07	5.78± 0.08	2.28± 0.05	2.89± 0.02	2.78± 0.04	66.78a ±1.61	58.56b ±0.66	59.63b ±0.64
Second Mo.	5.05b ±0.16	5.87a ±0.12	5.94a ±0.07	2.54b ±0.09	3.43a± 0.04	3.33a ±0.07	67.55a ±1.53	58.42b ±0.81	60.43b ±0.18
Third Mo.	5.15b ±0.18	6.11a ±0.12	6.18a ±0.13	2.23b ±0.04	3.72a± 0.05	3.35a ±0.03	68.38a ±1.34	58.01b ±0.19	59.85b ±0.16

Averages with different letters within one row indicate that there are significant differences at one level ($p<0.05$) between months

Table (2) shows the that the control treatment is significantly ($p<0.05$) effect in the concentration of cholesterol and triglycerides during to the first ,second and third months of the experiment compared with the second and third treatments, the averages reached (57.19,56.36,60.75),(55.53,57.16,62.63).(57.6. 28,69.81) mg/100ml for cholesterol and (61.19,64.21,68.90),(59.49,62.56,67.26),(60.2, 61.63,67.50) mg /100 ml respectively, it may

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be due to contain the leaves on saponins and resins (8,9,28), these compounds have the ability to adhesion neutral salts in the intestines and bile salts which leads to it not being absorbed it cholesterol is converted into bile acids in the liver Sauvaire (34). Or because olive leaves contain Oleuropein, which improves metabolism and prevents fat loss, (10,22,36). Results were not consistent with those indicated by (5), who did not notice a difference in cholesterol concentration when olive leaves powder was added to local goat feed.

Table 2. effect of adding different levels of olive leaves powder to feed in cholesterol and Triglyceride concentrations (mg/100ml) (Mean ±SE.).

Treatment / Periods	Cholesterol			Triglyceride		
	T1	T2	T3	T1	T2	T3
First Mo.	60.75 a ±1.32	57.19 b ±0.31	56.36 b ±0.45	68.90 a ±1.16	61.19 b ±1.51	64.21 b ±1.71
Second Mo.	62.63 a ±1.39	55.53 b ±1.11	57.16 b ±0.82	67.26 a ±1.52	59.49 b ±1.54	62.56 b ±1.55
Third Mo.	69.81 a ±1.22	57.21 b ±0.51	56.28 b ±0.18	67.50 a ±1.30	60.32 b ±1.32	61.63 b ±1.34

Averages with different letters within one row indicate that there are significant differences at one level ($p<0.05$) between months

Table (3) indicates that there was a significant decrease ($p<0.05$) in the concentration of the GPT enzyme during the first and third months in both the second and third treatments, compared to the control treatment. Also, there was a significant decrease ($p<0.05$) in the concentration of the GOT enzyme during the second and third months in the second and third treatments compared to the control group. The reason for this is related to Oleuropein, which has a role in treating cells and poisoned liver (41). Moreover, olive leaves have an anti-inflammatory role and stimulate the body's immune and physiological response (4). These results were consistent with the results of (1). Also, there was a significant decrease ($p<0.05$) in the concentration of the GOT enzyme during the second and third months in the second and third treatments compared to the control group ,and the values reached 33.97, 28.37, 27.60 and 36.47, 25.24, 31 60 IU/L ,respectively. The reason for this is related to Oleuropein, which it has a role in treating cells and poisoned liver (41). Moreover, leaves Olives have an anti-inflammatory role and stimulate the body's immune and physiological response (4). These results were consistent with the results of

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Table 3. effect of adding different levels of olive leaves powder to feed on the concentration of the enzymes GPT and GOT(IU/L) (Mean ±SE.).

Treatment / Periods	GPT			GOT		
	T1	T2	T3	T1	T2	T3
First Mo.	69.00 a± 2.01	55.75 b± 1.12	58.65 b± 2.30	25.37± 0.87	27.38± 1.10	25.07± 1.34
Second Mo.	57.20± 1.17	52.15 ± 2.26	59.79± 0.89	33.97 a ± 1.07	28.37 b± 0.72	27.60 b ± 1.14
Third Mo.	65.19 a± 2.20	53.25 b ±0.76	60.71± b2.23	36.47 a ± 0.69	25.24 b± 0.67	31.60 b ± 0.86

Averages with different letters within one row indicate that there are significant differences at one level($p<0.05$) between month

As shown in table (4), there was a significant increase ($p<0.05$) in the concentration of FSH and LH in the second and third treatments compared to the control treatment in all months of the experiment. The values reached 1.36, 3.19, 3.36, 1.63, 2.53, 3.16, 2.01, 3.21, 2.58, respectively, for FSH and 1.36, 2.66, 2.15, 1.18, 2.90, 2,6, and 1.24, 2.33, 2.86 ng/ml for LH. The reason could be the presence of composites in olive leaves, which decrease oxidative stress and cortisol, which in turn stimulate sexual hormones. (27,30) have shown a negative correlation between cortisol and sexual hormones.

Table 4. The effect of adding different levels of olive leaves powder to feed in hormonal concentration FSH and LH (ng/ml) (Mean ±SE.).

Treatment / Periods	FSH			LH		
	T1	T2	T3	T1	T2	T3
First Mo.	1.36b ±0.19	3.19 a ±0.31	3.36 a ±0.45	1.36b ±0.14	2.66 a ±0.08	2.15 a ±0.09
Second Mo.	1.63 b ±0.18	2.53 a ±0.11	3.16 a ±0.82	1.18 b ±0.10	2.90 a ±0.10	2.61 a ±0.10
Third Mo.	2.01 b ±0.12	3.21a ±0.51	2.58 a ±0.18	1.24 b ±0.08	2.33 a ±0.14	2.86 a ±0.13

Averages with different letters within one row indicate that there are significant differences at one level ($p<0.05$) between
months

Conclusions

The study concluded that olive leaves powder has a role in increasing some metabolic components such as total protein and albumin in the blood of developing animals. It also increases energy metabolism

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rates by increasing the body's cells' glucose consumption, as well as significantly reducing cholesterol and triglycerides. More importantly, olive leaf powder may improve and regulate reproductive functions because it has increased the rate of secretion of reproductive hormones in the blood. More importantly, olive leaf powder may improve and regulate reproductive functions because it has increased the rate of secretion of hormones reproductive in the blood .

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