



# EFFECT OF USE OF ALCOHOLIC EXTRACT OF LEMON GRASS AND ANISE SEEDS ON PRODUCTIVE PERFORMANCE, SOME BIOCHEMICAL BLOOD AND REPRODUCTIVE HORMONES IN LOCAL FEMALE GOATS

Mohammed Saleh Mohammed Al-Salam\* and Mohsen Yas Mohsen Almajmaee

Department of Animal Production, College of Agriculture, University of Tikrit, Iraq.

## Abstract

Sixteen female domestic goats ages 5.5 to 6 months with an average weight  $20.31 \pm 0.25$  kg. The experiment done in animal field, Department of Animal Production, College of Agriculture - University of Tikrit. Randomly distributed into four treatments, in order to study the effect of the addition of alcoholic extract of lemon grass and anise seeds in productive performance and some biochemical characteristics and estrogen, Progesterone and prolactin hormones for a period of 90 days. The first treatment was distilled water (control), while the dose of the second, third and fourth treatments with alcoholic extract of lemon and anise seeds and its mixture (100 mg / kg body weight extract lemongrass and 750 mg / kg body extract of anise seeds and weight(50 + 375) mg / kg body weight of their mixture respectively). The results showed that there was a significant increase ( $P < 0.05$ ) in the productive performance rate in favor of animals treated with lemongrass extract (second treatment) and animals treated with lemongrass extract and anise seeds were consumed the least amount of daily feed compared to the control group (first). The second treatment was significant in the level of blood globulin protein in the goat females after 90 days of treatments, estrogen and progesterone levels increased significantly in serum of the third treated animals.

**Key words :** lemon grass, anise seeds, biochemical blood, goat females.

## Introduction

The midst of enormous population growth conditions and high per capita living Requirements, the demand for livestock products such as meat, milk, eggs, etc. has increased. In increasing production, prevention and treatment of animal or human diseases without any collateral damage compared to processed feeds (Al-Ayti, 2003). N, 2004) also extracts Aquatic plants have the ability to lower blood sugar level in male rabbits with experimental diabetes (Aldouri, 2006) and increase the body weight in rats (Ozims *et al.*, 2017). It also has antioxidant (Biwn, 2001), and the presence of vitamins E, C and selenium in it act as enzymatic companions in many biochemical reactions may play an important role in improving metabolic pathways. This is reflected positively on productive performance (Ibrahim, 20 00), The addition of anise seeds to goat milk diets has led to an improvement in body weight Iftikhar *et al.*, (2017).

\**Author for correspondence* : E-mail : dr.m889@yahoo.com

## Materials and Methods

The experiment conducted in the animal field, Faculty of Agriculture / Department of Animal Production / University of Tikrit for the period from 4/1/2018 to 4/4/2019, employing 16 females of local goats, with ages ranging from 5.5 to 6 months with an average weight of  $20.31 \pm 0.25$ . Animals were divided into four treatments, the first treatment given distilled water, while the second, third and fourth treatments were treated with alcoholic extract of lemongrass and anise seeds and their mixture 100 mg / kg body weight lemon grass extract and 750 mg / kg body weight of anise seed extract) and 50 + 375 mg / kg body weight of their mixture respectively. Goats let for an introductory period (14 days) to take care of healthy animals during which before the start of the experiment to guard against potential pathological injuries. The animals fed a concentrated diet of wheat bran, crushed barley, crushed wheat, soybean meal and a mixture of minerals and vitamins. The crude protein content was 14.235%

and energy 2798.3 Kcal / kg as shown in table 1 collectively for each treatment and as 3% from body weight. The amount of feed is adjusted every two weeks in the light of changes in weight with the availability of coarse feed (hay) free, as well as the use of grazing animals for the duration of the experiment of 90 days, and clean water was provided in a barn for each group placed cubes of mineral salts inside each barn For all groups, Oz was recorded N females every week at seven in the morning before the follow-up in order to feed gravimetric daily and the overall increase.

**Table 1:** Components and ratios of the materials used in the composition of the diet used in the study.

Component ratio	Ingredients
21	Buckwheat bran
55	Crushed barley
15	Buckwheat
8	Soybean
1	Vitamins and minerals

The weight of the animals calculated weekly by an electronic balance of 40 kg, prepared for this purpose after cutting the feed for 12 hours. The total weight gain calculated by subtracting the initial weight of the animals from the final weight. Blood samples collected regularly during the physiological stages every fifteen days at 7:30 am, after cutting the animal feed for 12 hours, from the jugular vein in the neck area by a prophet syringe. This is 10 ml in clean and sterile centrifuge plastic tubes and is deposited for 1 hour at laboratory temperature. The tubes are then stored in the refrigerator (4°C) by slanting (45°C) for 24 hours, and placed in a centrifuge for Twenty minutes at a speed of 3000 r / min for the purpose of separating the blood serum from the rest of the components, save the serum frozen (- 20°C) in sealed tubes until the hormonal and biochemical tests. The total protein in serum measured by Biuret method and the serum albumin was estimated using Bromocresol green method. To calculate serum globulin, the following equation applied according to Bishop *et al.*, (2000).

$$\text{globulin}(\text{gm} / 100 \text{ ml blood}) = \text{total proteins} (\text{gm} / 100 \text{ ml blood}) - \text{albumin} (\text{g} / 100 \text{ ml blood})$$

The amount of urea in the blood serum was estimated using the ready-made analysis kit from GIESSE Italian company. The level of estrogen hormones progesterone in the blood serum was estimated using the ELISA (Tsang *et al.*, (1980), Radwanska *et al.*, (1978), and Uotila *et al.* (1981), respectively, based on the Direct Sandwich principle. Laboratory tests measured using the Biotech, Inc. Ready Work Kit.

The rumen liquid samples withdrawn on day 84 of the experiment by three raffles, the first raffle taken before the feed and the second two hours after feeding the animals and six hours later the third raffle taken in a quantity (10 ml). Immediately after the withdrawal process measured (PH) rumen using (PH meter) and to measure the concentration of ammonia filtered liquid gauze and samples taken (5 ml) was added (1 ml) of hydrochloric acid and the samples kept in plastic containers under freezing (-20 ° C) until the procedure Shamon (1983) analyzed the results of the experiment using a complete random design (CRD) to study the effect of coefficients on the studied traits, using SAS (2012) and averaged coefficients using the polynomial Duncan (1955) test to estimate the significance of the differences between the coefficients.

### Results and Discussion

Table 2 showed a significant superiority ( $P \leq 0.05$ ) in the final weight rate in favor of animals treated with lemongrass extract (second treatment) compared to the control group and the third treatment while it did not differ significantly from the fourth treatment. The highest significant value ( $P \leq 0.05$ ) in the animals of the second treatment compared to the rest of the treatments (Table 2).

Also that the animals of the poetry Alcoholic extract of Lemons and anise seeds consumed the lowest amount of feed per day compared to the control group (the first), and from the same table it is noted that the animals of the second treatment recorded the best value in the efficiency of food conversion compared to the first, third and fourth treatment during the duration of the experiment of 90 days. The increase in the weight of the treated animals may be due to the improvement of the internal environment of the small intestine due to the alcoholic extract of the lemongrass plant, leading to increased absorption and utilization of substances, as well as an improvement in metabolic variables related to the stability of glucose due to increased insulin secretion rate and inhibition rate. Glucose building, and this result agreed with Al-Obeidi and Radam (2012) found that there was a significant improvement in body weight in healthy male rats infected with experimental diabetes with aloxane when treated with alcoholic and aqueous extract of Lemon grass. 100 mg and 150 mg bw respectively, and Ademuyiwa and Grace (2015) found significant final body weight in male rats treated with alcoholic and aqueous extract of lemongrass (200 mg / kg bw) for 30 days Compared to the control group.

There is no significant effect ( $P \geq 0.05$ ) between the

groups treated with alcoholic extract of lemon grass and anise seeds on total protein and albumin concentration in local female goat serum. These results were consistent with what Khattab *et al.*, (2017) found that the addition of 4 g / kg of dry matter in the lemon grass has no significant effect on the total protein level of blood and albumin compared to the control group. Morsy *et al.* (2012) found a significant increase in total blood proteins and albumin levels when dosing female goats milk at 2 ml per head of anise seed oil for 90 days compared to the control group. Iftikhar *et al.*, (2017) found that the total protein level increased significantly in the serum of female dairy goat (Damami) added to their diet 2 and 3 g per kg of body weight of anise seeds compared to the control group. Blood globulin protein level in female goats Treatment After 90 days of treatment of alcoholic extract of lemon grass and anise seeds, the second, third and fourth treatment showed a significant increase ( $P \leq 0.05$ ) in the level of globulin compared with the first treatment (control) Table 4-4. The results were consistent with the findings of Morsy *et al.* (2012) who found a significant increase in the level of globulin when dosing female goats milk by 2 ml per head per day of anise seed oil for 90 days compared to the control group.

The results showed in table 4 the presence of significant differences ( $P \geq 0.05$ ) between the four groups treated with alcoholic extract of lemon grass and anise seeds in the level of estrogen after 60 and 90 days of treatment as the results showed a significant increase in the level of serum in animals The third treatment compared to the control group while it was not significantly different from the second and fourth treatment during this period. For the first treatment (control) within 60 and 90 days of the experiment period, while it did not differ significantly from the second and fourth treatments (Table 4). The absence of significant effect on the level of this hormone after 60 and 90 days of treatment. Estrogen, two

substances called Dianethole and Photanethole, The researchers believe that the presence of these two substances explains the strong effect of anise in breast milk generation in lactating women. Due to this characteristic it is possible to rely on taking anise in the treatment of menopause problems that arise due to estrogen breakdown that accompanies menopause (Oudat and Sheikh, 1984, Hussein and Mahdi, 1985 (Tas *et al.*, (2006), Rajeshwari and Abirami, (2011) reported that anise oil contains compounds of anis oil and are used for a number of purposes including aromatic, stimulant and sexually stimulating substances, as well as milk production.

The results in table 5 indicate that there was a significant effect ( $P \leq 0.05$ ) between the groups treated with alcoholic extract of lemon grass and anise seeds at the ammonia level in the local female goat rumen. While the control did not significantly differ from the third and fourth treatment after 1 and 2 hours of inoculation with the extract. After 3 hours after the dose, the level of rumen ammonia did not differ significantly between different treatments. As for the concentration of volatile fatty acids in the rumen within 1 hour. Of alcoholic extract There were no significant differences ( $P \geq 0.05$ ) in their level among the four groups, but after 2 hours there was a significant effect of the treatment in this trait. The second, third and fourth treatment showed a significant decrease ( $P \leq 0.05$ ) compared to the first treatment. There were no significant differences in their level among the four treatments after 3 hours of administration of alcohol. With regard to the concentration of pH in the rumen animals experiment within 1 hour of treatment with alcoholic extract of lemon grass and anise seeds, its value increased significantly ( $P \leq 0.05$ ) in the animals of the second treatment compared to the rest of the treatments. After 2 hours, the pH value increased significantly. In the rumen treated animals (second, third and fourth) compared to the control group (first), and continued

**Table 2:** Effect of alcoholic extract of lemon grass and anise seeds on the studied productive traits of local goat females (values represent mean  $\pm$  standard error).

Characteristics	Treatments				Statistical
	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	T <sub>4</sub>	
Primary weight rate (Kg)	19.79 $\pm$ 0.28	20.99 $\pm$ 0.51	19.82 $\pm$ 0.33	20.66 $\pm$ 0.64	N.S
Final weight rate (Kg)	29.21 $\pm$ 0.51b	31.98 $\pm$ 0.61a	29.21 $\pm$ 0.40b	30.08 $\pm$ 0.70ab	*
Rate of total weight gain(Kg)	9.41 $\pm$ 0.37b	10.99 $\pm$ 0.55a	9.59 $\pm$ 0.37b	9.41 $\pm$ 0.30b	*
Average daily weight gain( gm)	112.06 $\pm$ 4.39b	130.85 $\pm$ 6.54a	114.11 $\pm$ 3.58b	112.12 $\pm$ 1.39b	*
The amount of animal feed consumed Per (kg / day)	0.82	0.80	0.80	0.79	
Efficiency of food conversion (Kg feed / kg overweight)	7.99	6.39	7.59	7.30	

T<sub>1</sub>= distilled water, T<sub>2</sub> = lemongrass extract 100 mg / kg body weight, T<sub>3</sub>= (anise seed extract 750 mg / kg body weight, T<sub>4</sub> = lemongrass extract and anise seed 50 and 375 mg respectively .N.S = means no significant differences ( $P \geq 0.05$ ). Number of females (4) per treatment. \* = means significant differences ( $P \leq 0.05$ ).

**Table 3:** Effect of alcoholic extract of lemon grass and anise seeds on some blood biochemical variables in local female goats (values represent mean standard error).

Characteristics	Period	Treatments				Statistical
		T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	T <sub>4</sub>	
Total protein g/dl	30 days	7.35±0.26	6.77±0.24	6.90±0.46	7.05±0.17	N.S
	60 days	6.15±0.10	6.55±0.17	6.37±0.12	6.07±0.17	N.S
	90 days	6.80±0.06	7.20±0.11	6.95±0.25	6.97±0.07	N.S
Albumen g/dl	30 days	3.72±0.24	3.50±0.09	3.77±0.36	4.00±0.24	N.S
	60 days	3.92±0.08	3.57±0.16	3.80±0.05	3.52±0.18	N.S
	90 days	3.90±0.29	3.60±0.22	3.55±0.28	3.42±0.07	N.S
Globulin g/Dl	30 days	3.62±0.02	3.27±0.18	3.12±0.41	3.05±0.30	N.S
	60 days	2.22±0.07b	2.97±0.24a	2.97±0.13ab	2.55±0.12ab	*
	90 days	2.90±0.23b	3.60±0.10a	3.40±0.09a	3.55±0.08a	*

T<sub>1</sub> = distilled water, T<sub>2</sub> = lemongrass extract 100 mg / kg body weight, T<sub>3</sub> = (anise seed extract 750 mg / kg body weight, T<sub>4</sub> = lemongrass extract and anise seed 50 and 375 mg respectively .N.S = means no significant differences (P ≥ 0.05). Number of females (4) per treatment. \* = means significant differences (P ≤ 0.05).

**Table 4:** Effect of alcoholic extract of lemon grass and anise seeds on some serum hormones in local goat females (values represent mean standard error).

Characteristics	Period	Treatments				Statistical
		T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	T <sub>4</sub>	
Estrogen ng/ml	60 days	89.00±7.51b	110.00±13.73b	132.00±5.77b	117.00±12.99 b	*
	90 days	36.50±6.40b	55.00±10.66ab	74.50±6.29a	62.50±10.89ab	*
Progesterone ng/ml	60 days	19.50±3.54b	25.00±5.05ab	39.00±2.35a	34.00±7.22ab	*
	90 days	86.50±4.33b	92.50±6.06ab	106.50±2.60a	101.50±8.37ab	*
Prolactin ng/ml	60 days	0.50±0.05	0.51±0.02	0.51±0.03	0.51±0.04	N.S
	90 days	2.50±0.41	2.70±0.40	2.85±0.20	2.55±0.33	N.S

T<sub>1</sub> = distilled water, T<sub>2</sub> = lemongrass extract 100 mg / kg body weight, T<sub>3</sub> = (anise seed extract 750 mg / kg body weight, T<sub>4</sub> = lemongrass extract and anise seed 50 and 375 mg respectively .N.S = means no significant differences (P ≥ 0.05). Number of females (4) per treatment. \* = means significant differences (P ≤ 0.05).

**Table 5:** Effect of alcoholic extract of lemon grass and anise seeds on ammonia, volatile fatty acids and pH in local goat females (values represent mean ± standard error).

Characteristics	Period	Treatments				Statistical
		T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	T <sub>4</sub>	
N-NH3	1 hour from treatment	0.26±0.01a	0.22±0.02b	0.24±0.02ab	0.23±0.01b	*
	2 hour from treatment	0.25±0.01a	0.22±0.02b	0.24±0.02ab	0.24±0.01b	*
	3 hour from treatment	0.25±0.01	0.21±0.01	0.22±0.02	0.23±0.01	N.S
VFA	1 hour from treatment	2.30±0.07	2.28±0.08	2.10±0.17	2.33±0.08	N.S
	2 hour from treatment	2.67±0.02a	2.25±0.08b	2.40±0.17ab	2.25±0.08b	*
	3 hour from treatment	2.40±0.17	2.32±0.07	2.10±0.17	2.25±0.08	N.S
PH	1 hour from treatment	6.65±0.03d	9.10±0.07a	8.55±0.03b	7.18±0.08c	*
	2 hour from treatment	6.40±0.05b	7.35±0.08a	7.35±0.02a	7.15±0.20a	*
	3 hour from treatment	6.25±0.14b	6.95±0.02a	6.55±0.14b	6.45±0.02b	*

T<sub>1</sub> = distilled water, T<sub>2</sub> = lemongrass extract 100 mg / kg body weight, T<sub>3</sub> = (anise seed extract 750 mg / kg body weight, T<sub>4</sub> = lemongrass extract and anise seed 50 and 375 mg respectively .N.S = means no significant differences (P ≥ 0.05). Number of females (4) per treatment. \* = means significant differences (P ≤ 0.05).

superiority in favor of the second in this capacity after 3 hours of treatment compared to the rest of the treatments.

The result of the decrease in ammonia concentration

in the animal's rumen was consistent with that found by Kholif *et al.*, (2017), which showed that adding 10 g / day of lemongrass to the milk goat diet for 12 weeks led to a significant decrease in the level of ammonia and

increased digestible fiber and organic matter. While it did not agree with his grandfather Hosoda *et al.*, (2006), he observed a significant increase in the concentration of ammonia in cows added to the ration 5% of the plant lemon grass (the basis of dry matter) compared to the control group, while no significant differences were observed in both pH and fatty acids. Total Flyer.

That's can understood that the food additives of lemongrass extract and anise seeds led to the improvement in the production and hormonal performance as the main carrier of nutrients inside the body is blood. By improving the properties of blood, it improves its efficiency in transporting nutrients.

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