

The Effect of Adding *Cumin Cyminyum* Seeds to Concentrated Feed on Some Blood Biochemical Parameters of Black Local Goats

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Abstract

The current study was conducted the effect of adding *cumin cyminyum* seeds to concentrated feed on some blood biochemical parameters of black local goats. Fifteen female black goats aged 3 years, third milk production season. The study was in a private animal field of the Department of Animal Production- College of Agriculture/ University of Diyala, during the period from 1/11/2018 to 16/4/2019. The goats were divided randomly into three equal groups, 5 for each group. The first group (T₁) left without treatment as a control group. The second group (T₂) was given 10 g of cumin seed powder to the concentrated feed/ animal per day. The third group (T₃) was given 20 g of cumin seed powder to the concentrated feed/ animal per day. Blood samples were collected before the experiment (Zero day) and at the end of the experiment (3 months), 10 ml from jugular vein by via vacationer tubes without anticoagulant. Blood biochemical parameters were also estimated includes: Total protein, Albumin, Globulin, Glucose, Urea and Triglycerides. The results showed no significant (P>0.05) in Total protein, Albumin, Globulin, Glucose, Urea and Triglycerides between (Zero day) and at the end of the experiment (3 months) and between different treated groups during the study period. It was concluded from this study that addition of cumin seed powder to the black local goats ration have no effects on some blood biochemical parameters.

Keywords: Goats, Cumin Seeds, Blood Biochemical Parameters.

تأثير إضافة بذور نبات الكمون *Cuminum cyminyum* إلى العلف المركز في بعض معايير الدم الكيموحيوية

للماعز الأسود المحلي

الخلاصة

هدفت هذه الدراسة لمعرفة تأثير إضافة بذور الكمون في العليقة على بعض المعايير الكيموحيوية في إناث الماعز الأسود المحلي. استخدمت 15 ماعز محلي بعمر 3 سنوات، وفي الموسم الثالث من إنتاج الحليب. أجريت هذه الدراسة في الحقل الحيواني لقسم الإنتاج الحيواني في كلية الزراعة/ جامعة ديالى للمدة من 1/11/2018 إلى 16/4/2019. قسمت الحيوانات إلى ثلاث معاملات: المعاملة الأولى تركت بدون إضافة، المعاملة الثانية: أعطيت 10 غم من بذور نبات الكمون في العليقة لكل حيوان. والمعاملة الثالثة: أعطيت 20 غم من بذور نبات الكمون في العليقة لكل حيوان. تم جمع الدم قبل إجراء التجربة (اليوم صفر) وفي نهاية التجربة (بعد 3 أشهر)، تم سحب 10 مل من الدم عن طريق الوريد الوداجي بواسطة أنبوب خالي من مانع التخثر. تم قياس المعايير الكيموحيوية والتي تشمل: البروتين الكلي، الألبومين، الكلوبولين، الكلوكون، اليوريا والدهون الثلاثية. أظهرت النتائج عدم وجود فروق معنوية في البروتين الكلي، الألبومين، الكلوبولين، الكلوكون، اليوريا والدهون الثلاثية بين اليوم صفر وفي نهاية التجربة (بعد 3 أشهر). نستنتج من الدراسة أن إضافة بذور نبات الكمون إلى علائق الماعز المحلي الأسود لم يؤثر في بعض المعايير الكيموحيوية.

Introduction

Goats are raised in the production of meat, milk, hair, and leather in abundance in the world. Goats are distinguished by high metabolic efficiency, having twins, long productive lives, efficient use of pastures, his eating of feed that is not consumed by other animals; the price of it is attributed to sheep, his early sexual attainment and the diversity of his production (1). Economic animal because the costs of raising them are simple, in addition to its efficiency and superiority over other animals in economic terms, as a milk animal is more efficient than the cow, when comparing its production of milk with body weight and the quantity and quality of food intake, the milk production from goats is approximately 25% of cow production under conditions Good food and administrative (2). Several studies have indicated the possibility of using medicinal plants to improve the productive characteristics of farm animals (3), including cumin seeds, which are considered a stimulus for growth and stimulate the secretion of various digestive enzymes and thus lead to improving the efficiency of food digestion and stimulate milk tissue in the mammary glands to form and secrete milk, which leads to Improving milk production for milk cattle (4). Cumin seeds also contain active substances that include alkaloid, anthraquinone coumarin, flavonoid, glycoside, protein, resin saponin, tannin steroid (5). Therefore, this study was conducted with the aim of explaining the effect

of adding cumin seeds to concentrated feed on the production of milk and its ingredients for local black goats.

Materials and Methods

The current study was conducted in the animal field of the Department of Animal Production- College of Agriculture/ University of Diyala, for the period from 1/11/2018 to 16/4/2019 and 15 female black goats aged 3 years and the third milk production season are used in this experiment, randomly distributed transactions on 3 treatments and by 5 animals per treatment, the experiments included adding different levels of cumin seeds and the treatments were distributed as follows: The first Group (control) T1 without addition, the second treatment T2: adding 10 g of cumin seed powder to the concentrated feed/ animal per day, the third treatment T3: adding 20 g of cumin seed powder to the concentrated feed/ animal per day immediately after birth. Goats were placed in a semi-open residence individually in reservations with dimensions of $1 \times 1.5 \text{ m}^2$ containing fodder to place the feed in it and also contain pots for drinking water, the goats were fed a mixture of concentrated feed as shown in (Table 1 and 2) because the goats were given a quantity of concentrated feed 3% of the body weight of each animal fodder daily The concentrated feed is provided in two meals in the morning and evening at the same time. The coarse feed was only hay, and it is served free. Water is also provided free to animals.

Table (1) Percentage of concentrated feed ingredients provided in experiment animals

Feed material	%
Barley	60
Wheat bran	29
Soybean meal	8
Salt	1
Limestone	2
Total	100

Table (2) The composition of concentration ration%

Material	Cumin seed (%)*	Forage feed (%)**
Dry matter	98.73	87.8
Crude protein	12.62	14.98
Fat	15.41	2.03
Ash	4.37	4.39
Humidity	1.27	12.2
Fiber ratio	13.9	6.8

*The chemical analysis of cumin seeds used in the experiment was carried out according to (6)

** According to the chemical composition of feed concentrated according to the analysis of feedstuffs in the reports of the American National Research Council (7).

Blood biochemical parameters:

Blood samples were collected before the experiment (Zero day) and at the end of the experiment (3 months), 10 ml from jugular vein by via vacationer tubes without anticoagulant and then placed in the centrifuge 3000 rpm/ min for 15 minutes, as the serum was separated, on which the following tests were carried out via:

- **Total protein concentration:** The total protein concentration was measured using a ready kit (Kit) from the German company "Human" and based on the working steps attached to the kit were placed in a Spectrophotometer along the wavelength of 520 nanometers as reported by (8) according to the following:

Total protein concentration (g/ 100ml) = sample reading/ standard reading × standard concentration

- **Albumin Concentration:** The albumin concentration was calculated by using a special kit (Kit) from the German company Human, using the Spectrophotometer at a wavelength of 578 nm as indicated by (9). Using the following equation the result is obtained:

Albumin concentration (g/ 100ml) = sample reading/ standard reading × standard concentration

- **Globulin Concentration:** The concentration of Globulin in serum was calculated from the difference between total protein concentration and albumin, according to (10) and the measurement of Globulin in grams/ 100 ml serum.
- **Glucose concentration:** The serum glucose concentration was measured using a ready kit (Kit) from the German company Human using the spectrophotometer along the 510 nm wavelength and as indicated by (9). The glucose was calculated according to the following:

Concentration of glucose (mg/ 100ml) = sample reading/ standard reading × standard concentration

- **Urea Concentration:** Urea has been measured using several ready-made devices from the German company Human and using an optical spectrometer along a wavelength of 600 nanometers, according to what (8) indicated using the following:

Urea concentration (mg / 100ml) = sample / standard reading x standard concentration

- **Triglycerides:** The concentration of triglycerides in the serum was estimated using the ready kit (Kit) from the German company Human, and based on the measurement steps that came with the kit, the sample was read on an optical spectrometer along a 500 nm wavelength. According to the formula developed by (11).

Triglycerides (mg/ 100ml) = sample reading/ standard reading × standard concentration

Statistical analysis of data were done according to SPSS (12) and Duncan multiple range test (13) using level significant.

Results and discussion

Table 3 shows The effect of adding cumin seeds to the concentrated diet on the Total protein, Albumin and Globulin of blood serum for female goats at the Initial and end of the experiment, as it was shown from the table that there was no significant effect between the treatments on the Total protein, Albumin and Globulin, as the total protein in the serum reached zero day (7.12, 7.20 and 7.21) g/ 100 ml, and 3 months (5.07, 5.73 and 5.62) g/ 100 ml respectively. Albumin (2.89, 3.31 and 3.37) g/ 100 ml, and (2.86, 3.08 and 3.01) g/ 100 ml respectively. Globulin (4.23, 3.89 and 3.84) g/ 100 ml, and (2.15, 2.65 and 2.60) g/ 100 ml respectively.

Table 4 shows The effect of adding cumin seeds to the concentrated diet on the Glucose, Urea and Triglycerides of blood serum for female goats at the Initial and end of the experiment as it was shown from the table that there was no significant effect between the treatments on the Glucose, Urea and Triglycerides, as the Glucose (78.37, 86.32 and 82.65) mg/ 100 ml, (66.75, 68.25 and 65.75) mg/ 100 ml respectively, Urea (22.96, 26.15 and 27.02) mg/ 100ml, (23.56, 23.02 and 23.19) mg/ 100ml respectively and (139.70, 160.52 and 182.64) mg/ 100 ml, (122.27, 153.50 and 158.09) mg/ 100 ml respectively.

These results were agreement with (14) when using cumin seeds at a rate of 0, 100, 200, 300 g/ day for cows, which showed no significant differences between treatments in blood glucose and urea. It also agreement with (15) that there was no significant difference in protein and urea in the blood when using cumin to feed goats. This result disagreed with

the study conducted by (16). There was superiority when using cumin by 2% to the diet as the percentage of total protein and globulin in the blood and also disagreed with (17) when studying the addition of cumin seeds 10 g/ animal to fodder to know the effect of adding cumin seeds to goat meals. There were significant differences in the concentration of total proteins, globulins and glucose in the blood. The reason may be due to the absence of significant differences between the treatments that the cumin seeds have no negative effect on the serum traits and thus the traits are stable, or the reason may be due to the small number of repeats of the experiment.

Conclusion

From the current results we can concluded that the absence of significant changes between treatments in the some blood biochemical parameters indicates that there are no positive effects of cumin seed on animals.

Table (3) The effect of adding cumin seeds to the concentrated diet on the Total protein, Albumin and Globulin of blood serum for female goats at the Initial and end of the experiment (Mean \pm SE)

Parameters	Total protein (g /100ml)		Albumin (g /100ml)		Globulin (g /100ml)	
	Zero day	3 Months	Zero day	3 Months	Zero day	3 Months
T1	7.12 \pm 0.56	5.07 \pm 0.90	2.89 \pm 0.23	2.86 \pm 0.38	4.23 \pm 0.66	2.15 \pm 0.25
T2	7.20 \pm 0.47	5.73 \pm 0.81	3.31 \pm 0.10	3.08 \pm 0.44	3.89 \pm 0.38	2.65 \pm 0.38
T3	7.21 \pm 0.45	5.62 \pm 0.66	3.37 \pm 0.12	3.01 \pm 0.36	3.84 \pm 0.41	2.60 \pm 0.32
Levels of significant	N.S.		N.S.		N.S.	

NS= Non-significant.

T1: Control, T2: diet adding cumin seeds with 10 g/ Goat/day, T3: diet adding cumin seeds with 20 g/ Goat/day

Table (4) The effect of adding cumin seeds to the concentrated diet on the Glucose, Urea and Triglycerides of blood serum for female goats at the initial and end of the experiment (Mean \pm SE)

Parameters	Glucose (mg/ 100ml)		Urea (mg/ 100 ml)		Triglycerides (mg/ 100 ml)	
	Zero day	3 Months	Zero day	3 Months	Zero day	3 Months
T1	78.37 \pm 2.24	66.75 \pm 4	22.96 \pm 1.59	23.56 \pm 2.33	139.70 \pm 24.14	122.27 \pm 23.6
T2	86.32 \pm 3.78	68.25 \pm 4.36	26.15 \pm 2.17	23.02 \pm 2.04	160.52 \pm 19.94	153.50 \pm 35.11
T3	82.65 \pm 4.49	65.75 \pm 4.64	27.02 \pm 1.88	23.19 \pm 2.22	182.64 \pm 13.54	158.09 \pm 30.30
Levels of significant	N.S.		N.S.		N.S.	

NS= Non-significant.

T1: Control, T2: diet adding cumin seeds with 10 g/ Goat/day, T3: diet adding cumin seeds with 20 g/ Goat/day

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