Effect Biological lupine Albus on some wool physiological traits of Awassi Lambs

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Abstract

Back Ground: The study was conducted in the field of animal production - College of Agriculture / University of Tikrit for the period from 15/2/2017 to 15/5/2017.

Objective: to study the effect of replacing the seeds of white Lupinus albus as a protein source instead of soybean meal and its effect on some characteristics of wool: (softness , elongation, tensile strength, raw weight and clean weight) at the age of (4 and 6) months, respectively, for the mentioned characteristics, and the quality of wool fibers is the basis of characteristics and defects, as the fiber diameter is the main determinant of quality.

Materials and Methods: The experiment was conducted by raising twelve Awassi lambs, 4 months old, with an average starting weight of 24.65 ± 2.49 kg. The lambs were distributed among 3 treatments (4 lambs/treatment). At levels (0, 6 and 12%) for the first treatment (control), the second and the third, respectively.

Results: After completing the experiment using white lupine seeds, the results indicated that there were no significant differences between the studied traits (softness, tensile strength, raw weight and clean weight) at the age of (4 and 6) months, respectively, except for the second treatment (6% lupine), which was significantly superior (0.05). > P) In terms of elongation at the age of 6 months (65.25 ± 1.92) compared to the first and second treatments (0 and 12) % lupine, respectively.

Conclusion: I used a balanced diet in its content of energy and protein and added a protein source (white lupine seeds) instead of soy beans and did not occur any negative changes that affected the qualities of wool, and this means the positive use of it in feeding ruminants.

Key word: (wool, Awassi Lambs , Lupine Albus , Soya Bean).

Introduction:

Several studies indicate that nutrition is one of the important factors in its impact on the rate of wool production. One of the most desirable and best prevalent breeds in central Iraq, the Middle East and Western Asia is the Awassi sheep, and in order to obtain the highest production of wool, we must protect them from the factors that affect their production and create the appropriate conditions for them (2010,1). For the animal, wool is the covering and the insulating layer against any external influence, which in turn protects it from environmental conditions. The types of wool differ according to the quality, and the quality of the wool fibers is measured by two important measures, namely, its softness and length. The quality of the wool fibers is the basis of the different characteristics and defects (inherited and acquired) in wool, as the diameter of the fibers is the main determinant of quality (2010, 2). The diameter is affected by several factors, including nutrition, as it is one of the most important external factors that affect wool production (2012,3), which causes differences in diameter and fiber length. (4, 1999) indicated that many fiber properties can affect the quality of wool. The cleanliness of the wool is of great importance in determining the amount of the final product obtained from a certain weight of raw wool (2000,5). It is also believed that the differences in The supply of nutrients to the follicles can cause a significant impact on the rate of wool fiber production and its characteristics. Diseases are among the factors that negatively affect the growth rate, quantity and quality of wool Sheep are raised in a free environment, which means that the quantity and quality of fodder available to them varies throughout the year. Therefore, the peak rate of wool growth is two to three times the minimum rate of sheep grazing (1999,6 and 2001,7). Several studies have indicated that the growing season and the amount of feed eaten have a significant impact on the rate of wool growth, and there are sheep breeds that respond to a large extent to an increase in the amount of feed, which affects the rate of wool growth, unlike some breeds that show little response to changes in the diet during the winter season. The fiber growth of Ankora goats is less responsive to feeding during winter compared to summer, and there is no exact general agreement on the relationship between wool growth and feed intake, but the available evidence indicates a positive linear relationship between eating dry and easily digestible materials and wool growth. On the other hand, the rate of wool growth is affected However, there is no convincing evidence that weight change has an effect on the growth rate of wool, and the relative importance of energy and protein supplies to wool growth remains unresolved until the special features of digestion are taken into account. When protein degradation is avoided, a significant increase in Wool growth rate as small responses correlate with energy (2001,8). There is little empirical evidence showing the effect of feeding on the fiber production of goats, as the production of mohair wool is affected by feeding and season, but the effect is fluctuating compared to sheep breeds (1999,9). It was shown (2000,10) that very high rates of wool growth can be obtained with moderate energy intake when casein is given through rennet. The protein available for digestion and absorption in the small intestine is related to the energy digested, and it often appears that energy is the main food factor associated with the growth of wool, affecting the growth rate of the length and diameter of the fibers. In contrast to these effects, protein or amino acids can negatively affect wool growth and can also produce differential effects on growth rate of length and fiber diameter (2001, 11). While a balanced mixture of essential amino acids is required for high rates of wool growth, the purpose of the amino acid is the element sulfur that plays a major role in regulating the growth and formation of wool, as well as the major component cysteine, and methionine, which can be easily converted into cysteine, which is effective To stimulate the growth of wool. However, excessive amounts of methionine are inhibiting the growth of wool. This may be useful for increasing the wool production by the sheep, because the composition of the wool is significantly affected by the feeding of the sheep. The increase in the supply of cysteine to the follicles increases the proportion of high-sulfur proteins, and thus increases the sulfur content of the wool. The high sulfur proteins in wool are also affected by different nutritional treatments, but the control mechanism has not been identified. Many of the effects of minerals appear to be due to changes in the supply of major nutrients caused by changes in forage intake or in the balance of nutrients flowing from the rumen. Only zinc and copper have specific effects of the minerals on fiber growth, and even some of them may be related to changes in feed intake. Zinc deficiency in sheep causes brittleness of wool and loss of its curls, and severe deficiency causes stunted fiber growth and wool fall. In goats of unknown breed, zinc deficiency was found to cause reduced length of hair growth. There is no evidence that increasing zinc levels more than required affects wool growth. Copper deficiency causes wool pigmentation in black sheep and wool syndrome, and the rate of wool growth decreases, and also may cause a decrease in the amount of feed intake. Copper supplementation may specifically stimulate wool growth but the evidence is scant (2000,12). Deficiency of various B vitamins may affect hair growth and are important for maintaining high rates of hair growth due to their role as a cofactor for enzymes involved in the metabolism of methionine and cysteine. However, there is no empirical evidence for the effect of vitamins on wool growth.

Materials and methods:

This study was conducted in the field of animal production of the College of Agriculture - Tikrit University for the period from 13/2/2017 to 13/5/2017. The number of experimental animals was twelve lambs aged four months, with an average weight of 23.45 kg, distributed randomly into three treatments, and each treatment included four replicates raised inside cages individually. From the concentrated ration in order for the animals to gradually acclimatize to the ration. Then the treated animals were fed (12% soybean + 0% lupine, 6% lupine + 6% soybean and 12% lupine + 0% soybean) for the first, second and third treatments, respectively, as shown in Table No. (1). The concentrated diet was given By 3% of the live weight and by two meals per day for each pregnancy (at seven in the morning and seven in the evening). As for the rough feed and water, it was constantly available to the animals throughout the experiment period. Wool samples were taken with an area of 10 cm2 from the right shoulder area of all lambs, and this was before starting the experiment, and the samples were taken again after three months at the end of the experiment. On warm water at a temperature of (55°C), liquid soap was added to it 10%. As for the second and third basins, only water had a temperature of 50°C and 45°C, respectively. The samples were dried in the chamber and then weighed again. Then the samples were sent to the Spinning, Weaving and Woolen Industries Factory in Baghdad to conduct some chemical tests on them.

Table (1): shows the proportions of the feed materials used in the experiment

The third treatment is 12% thermos seeds	Second transaction rate 6% Thermos Seeds	Treatment of control	Feed material
%	%	%	
38	43	48	crushed barley
18	17	19	crushed wheat
30	26	19	bran
0	6	12	soybean meal
12	6	0	lupine seeds
1	1	1	table salt
0. 5	0. 5	0. 5	Mixed minerals and vitamins
0. 5	0. 5	0. 5	limestone
100	100	100	% the total
15. 40	15. 60	15. 80	raw protein

Results:

Table No. (2) shows the effect of feeding with two different levels of lupine seeds on the fineness of the wool, as there were no significant differences for the treatment on the fineness of the wool of lambs at the age of 4 months or at the age of 6 months, although there was an arithmetic decrease in the value of the fineness trait if the treatment gave The second (6%) at 4 and 6 months of age had the lowest value (19.24 ± 1.73, 21.14 ± 1.26) compared to the first and third treatment (18.25 ± 0.87, 18.06 ± 1.52) and (18.07 ± 0.27, 18.15 ± 0.91).

We note from the results of Table No. (3) that there were no significant differences in the tensile strength trait between lamb's wool fibers at the age of 4 and 6 months, noting that the second and third treatment increased the values of the studied trait compared to the first treatment of lambs at the age of 6 months and compared to the same values at the age of 6 months 4 months.

Table (2): Effect of feeding with two levels of lupine seeds on the fineness of wool at 4 and 6 months of age

Treatments	Mean ± SE	
	Age 4 m	Age 6 m
T1	18.06 ± 1.52	18.25 ± 0.87
T2	21.14 ± 1.26	19.24 ± 1.73
T3	18.15 ± 0.91	18.07 ± 0.27
LSD value	4.019 NS	3.625
NS: Non-Significantly.		

Table (3): Effect of feeding with two levels of lupine seeds on the tensile strength between wool fibers at 4 and 6 months of age

Treatments	Mean ± SE	
	Age 4 m	Age 6 m
T1	1.522 ± 0.04	1.407 ± 0.13
T2	1.442 ± 0.16	1.565 ± 0.09
T3	1.560 ± 0.06	1.600 ± 0.00
LSD value	0.337 NS	0.313 NS
NS: Non-Significantly.		

Table (4) shows the biological effect of lupine plant on elongation, as the second treatment containing 6% lupine was superior to the first treatment by 0%, where the values reached (1.92 ± 65.25 and 5.07 ± 49.37), respectively. The results in Table (5 and 6) indicate the absence of significant differences for the effect of the studied treatments on the characteristics of raw weight and clean weight at the age of 4 and 6 months in Awassi lambs.

Table (4): Effect of feeding with two levels of lupine seeds on the elongation of wool fibers at 4 and 6 months of age

Treatments	Mean ± SE	
	Age 4 m	Age 6 m
T1	58.00 ± 6.24	49.37 ± 5.70 b
T2	62.85 ± 5.76	65.25 ± 1.92 a
T3	53.60 ± 3.54	53.47 ± 3.91 ab
LSD value	17.008 NS	13.259 *
Means having with the different letters in same column differed significantly, * (P<0.05).		

Table (5): shows the biological effect of lupine plant on the characteristics of raw weight and clean weight of wool fibers aged 4 months

Treatment	Mean ± SE	
	raw weight (age 4)	clean weight (age 4)
T1	0.772 ± 0.23	0.637 ± 0.18
T2	0.687 ± 0.10	0.540 ± 0.11
T3	0.827 ± 0.12	0.710 ± 0.12
LSD value	0.519 NS	0.466 NS
NS: Non-Significantly.		

Table (6): shows the biological effect of lupine plant on the characteristics of raw weight and clean weight of wool fibers

Treatments	Mean ± SE	
	Raw weight (age 6)	clean weight (age 6)
T1	1.072 ± 0.12	0.902 ± 0.06
T2	1.035 ± 0.13	0.830 ± 0.11
T3	1.372 ± 0.14	1.127 ± 0.12
LSD value	0.426 NS	0.324
NS: Non-Significantly.		

Discussions

I used a balanced diet in its content of energy and protein and added a protein source (white lupine seeds) instead of soybeans and did not occur any negative changes that affected the qualities of wool, and this means the positive use of it in feeding ruminants.

Conclusion

Through the results obtained from this study, we can reach the possibility of using the seeds of the white lupine plant in feeding lambs, because it is close in its nutritional value to the content of soybeans and benefit from it as a feed source for animal.

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التأثير البايولوجي للترمس الابيض على بعض الصفات الفسلجية للصوف في الحملان العواسي

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الخلاصة

خلفية البحث: اجريت الدراسة في حقل الانتاج الحيواني - كلية الزراعة /جامعة تكريت للفترة من 2017/2/15 إلى 2017/5/15.

الهدف من البحث: لدراسة تأثير إحلال بذور الترمس الابيض Lupinus albus L كمصدر بروتيني محل كسبة فول الصويا و أثرها على بعض صفات الصوف : (النعومة ، الاستطالة ، قوة الشد ، الوزن الخام و الوزن النظيف) عند عمر (4 و 6) اشهر على التوالي للصفات المذكورة، و تعتبر جودة الياف الصوف هي اساس الخصائص والعيوب اذ يعد قطر الالياف هو المحدد الاساسي للجودة .

المواد وطرق العمل: تم إجراء التجربة بتربية اثنا عشر حملاً عواسياً بعمر 4 اشهر بمعدل وزن ابتدائي 24.65±2.49 كغم ، ووزعت الحملان على3معاملات (4 حملان/ معاملة). بمستويات (0 ،6 و12%) للمعاملة الاولى(سيطرة) ، الثانية والثالثة على التوالي.

النتائج: بعد إتمام التجربة بإستخدام بذور الترمس الابيض أشارت النتائج لإنعدام الفروق المعنوية بين الصفات المدروسة (النعومة ، قوة الشد ، الوزن الخام والوزن النظيف)عند عمر(4 و 6) اشهر على التوالي باستثناء المعاملة الثانية (6% ترمس) تفوقت معنوياً ($P < 0.05$) بصفة الاستطالة عند عمر 6 اشهر (65.25 ±1.92) مقارنة بالمعاملتين الاولى والثانية (0 و12) % ترمس على التوالي .

المناقشة: استخدمت عليقة متوازنة في محتواها من الطاقة والبروتين واضيف مصدر بروتيني (بذور الترمس الابيض) بدل فول الصول ولم تطرا اي تغيرات سلبية أثرت في صفات الصوف وهذا يعني إيجابية استخدامه في تغذية المجترات.

الكلمات المفتاحية: (صوف ، حملان عواسية ، بذور الترمس ، فول الصويا).