



THE EFFECT OF NIGELLA SATIVA OIL SEED MEAL ON SOME PRODUCTIVE AND SEXUAL CHARACTERISTICS OF (AL-BARKI) LOCAL EWES

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ABSTRACT

Twenty one AL-Barki ewes were used in this study with average age 3-3.5 years old and average weight 39.900-40.500 kg. The number of ewes divided into three similar groups, each group contains seven ewes. The first group fed with ration without *Nigella sativa* oil seed meal (control), while the second and the third were fed with 5% and 10% of meal components respectively.

The groups of ewes were fed with duration began 45 days before fertilization and continued to the end of lambs suckling (the weaning).

Therefore, some productive and sexual characteristics were studied involving the amount of milk, % protein, % fat, % lactose and percentage of ash in milk. While other characteristics including percentage of fertility, weaning, barrenness and length of gestation are also recorded.

The results showed significant effect ($p < 0.05$) of *Nigella sativa* oil seed meal on most of the studied characteristics, such as; the increasing of ewes weight, milk production, percentages of weaning lambs and fertility. On the other hand, the percentages of barrenness has decreased with no effect on length of gestation and percentages of lactose and ash in milk. The percentages of fat has decreased with increasing amount of *Nigella sativa* oil seed meal.

Key words: *Nigella sativa*, sexual characteristics, fertility weaning, barrenness

INTRODUCTION

The medical plants including the *Nigella sativa* (named Albaraka seeds in Libya) have been used for long time in numerous countries for medical and industrial purposes. The *Nigella sativa* plant is a herbious plant belong to the family of (Ranunculaceae), its extractable seeds oil uses in many domestic and medical purposes, while the residues named pomace which contains high nutrients and energy could be used as a meal in the ration component, because it is rich and cheaper than other cotton or flax pomaces.

On the other hand the fertility of ewes is the most important measure for sexual efficiency affecting the number of born and weaning lambs, and this affecting the ability of renewing and finally on the profit of the project. Accordingly the type and level of animal nutrition are very important factors affecting sexual efficiency and productivity in addition to environmental and other factors i.e age, weight and body form of ewes, (El-Ekhnawy et.al, 1999).

And due to the shortage in the studies concerning the use of *Nigella sativa* oil seed meal in Libya. This study was conducted to understand the effect of different levels of *Nigella sativa* oil seed meal in ration component feed before fertilization and during the suckling on some productive and sexual characteristics of AL-Barki ewes.

MATERIALS AND METHODS

This study was conducted in BaniWalid private sheep farm, in which twenty one ewes were used with average age 3-3.5 years old, and average weight 39.900-40.500 kg. The group of ewes divided into three equal subgroups and put into three neighbouring sheep fold with equal areas. The ewes were fed with three levels of



Nigella sativa oil seed meal comprising 0% (control), 5% and 10% the feedings are done with a period starting 45 days before fertilization and continued to the weaning season with 4% by ewes weight according to (NRC,1985). The chemical analysis of three ration is presented in the following table(1).

Table 1: The chemical composition of three rations

Type of ration	D.M %	O.M %	C.P %	C.F %	E.E %	Ash %	NFE %
Control (0%)	100	93.50	12.11	12.90	2.42	6.50	66.07
<i>Nigella sativa</i> seed meal (5%)	100	93.30	13.61	12.98	2.50	6.70	64.21
<i>Nigella sativa</i> seed meal (10%)	100	93.25	15.92	13.10	2.58	6.75	61.65

Therefore feedings were applied twice a day in the morning and in the evening the age and weight of ewes are recorded before starting the experiment and in the beginning of pregnancy, as well as the fertilized and non fertilized ewes. Measurements also extended to the number of born lambs for each ewe, number of weaning lambs, milk production for each ewe starting from the fourth day of procreation for each week according to (Hadjipanayiotou and Louca, 1976). The percentages of protein in the milk was determined according to (AOAC,1985), the fat according to (BST,1955), the lactose according to (Abdel Tawab and Branett,1975), and the ash percentage .

The work also covered measurements concerning some productive and sexual characteristics i.e, percentages of fertility, percentages of barrenness, length of gestation, percentages of weaning lambs and the chemical component of milk .

The statistical analysis for all studied parameters were analyzed according to (Snedecor and Cochran,1980), and the significance among means experimental groups were tested by (Duncan's multiple range test,1955).

RESULTS AND DISCUSSION

1-Sexual characteristics:

The data in table(2) showed increases in ration consumption with increasing the percentage of *Nigella sativa* seed meal, this causes increases in the weight of ewes before fertilization, resulted by the improvement in digestion of dry mater (Hassan, et.al,1996), and this improved the health of ewes and their sexual characteristics (Aziz, et.al,1981).

Table(2): Effect of *Nigella sativa* seed meal on the consumption of ration and weight of ewes

Characteristic	Control (0%)	<i>Nigella sativa</i> (5%)	<i>Nigella sativa</i> (10%)
Amount of ration consumption Kg/ewe/day	1.606	1.662	1.660
Weight of ewes at the beginning of experiment	40.00	40.50	40.100
Weight of ewes at the beginning of pregnancy	b 40.30 ±0.382	a 42.60 ±0.435	a 42.90 ±0.391



Data in table(3) showed significant effect ($p < 0.05$) of the *Nigella sativa* seed meal on all sexual characteristics, reflected on the percentage of fertility and number of weaning lambs. While the percentage of barrenness has decreased. The increase in the fertility of ewes caused by improvement in weight, and this improved the case of ewes health and physiology (Coop, 1966).

Table 3: Effect of *Nigella sativa* seed meal on some sexual and productive characteristics

Characteristics	Control (0%)	<i>Nigella sativa</i> (5%)	<i>Nigella sativa</i> (10%)
Percentage of fertility	85.71	100	100
Percentage of barrenness	14.28	0	0
Percentage of weaning lambs	83.33	100	100
Length of gestation	a 155 ± 1.414	a 155 ± 0.816	a 157 ± 0.816

Data in table(4) showed significant effect ($p < 0.05$) of the *Nigella sativa* seed meal on milk production of ewes. The amounts ranged among 600, 725 and 760 kg/ewe/day for the three treatments 0% (control), 5% and 10% respectively. This due to the increase in the length of the season of milk production as well as to the increase in the weight of ewes at the beginning of pregnancy and procreation (Majdoub, et al, 1978).

Data also clarified significant effect of the *Nigella sativa* seed meal on the chemical components of milk except the lactose and ash percentages. Whereas the percentage of protein has increased and the percentage of fat has decreased.

These results have agreed with (Youssof et al, 1998), when they studied the effect of *Nigella sativa* seed meal on the fertility percentage in buffaloes. Also agreed with (EL-EKhnawy, et al, 1999) when they mentioned to the increase of fertility in Al-Barki ewes by using 150 and 250 g of the *Nigella sativa*.

Table 4: Effect of *Nigella sativa* seed meal on the chemical component and production of milk.

Characteristics	Control (0%)	<i>Nigella sativa</i> (5%)	<i>Nigella sativa</i> (10%)
Milk production g/ewe/day	600 ± 53.009	725 ± 34.539	760 ± 31.982
Protein %	4.50 ± 0.109	4.85 ± 0.189	5.20 ± 0.258
Fat %	4.80 ± 0.304	7.61 ± 0.236	3.70 ± 0.230
Lactose %	4.50 ± 0.212	4.41 ± 0.186	4.38 ± 0.194
Ash %	0.80 ± 0.110	0.90 ± 0.070	0.91 ± 0.042

Finally it is concluded that the use of *Nigella sativa* seed meal in feeding the Al-Barki ewes could improve the productive and sexual characteristics of these animals.

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