

EFFECT OF USE FENUGREEK SEEDS (*Trigonella foenum-graecum*) ON SOME SEMEN CHARACTERISTICS OF AWASSI RAMS IN WINTER SEASON.

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ABSTRACT

This study aimed to know the effect of three rations contains same crude protein and metabolizable energy but differs in Fenugreek seeds percentage(0 , 5 and 10 %), Fifteen Awassi rams (2-3 years old), were randomly divided into three equal groups (5 rams/group) weighting 50-55 Kg during winter season from (15/11/2011 - 15/2/2012). Results showed that feeding of Fenugreek seeds had a significant effect ($P \leq 0.05$) on semen ejaculation volume, semen consistency ,mass and individual motility of spermatozoa, percentages of live and dead spermatozoa , sperm abnormality .However there were no significant effect ($P \leq 0.05$) on total sperm concentration / ml compared with the control group rams.

Keyword: Fenugreek seeds , semen , ram.

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Introduction

Animal nutrition is very important for enhancing spermatogenesis and secretion of sexual hormone in testes, and low nutrition levels leads to destruction of primordial germ cells (Ishaq, et al 2011) . Many studies had referred to the effect of fenugreek seeds in diet for ewes , goat, cattle, on blood composition ,wool , meat and milk production . In last period researchers work to study the characteristics and components of medical plants such as Fenugreek , Nigella sativa , Cumin, Ginger and their effect on immunity, digestion, reproduction and blood composition , Fenugreek (*Trigonella foenum-graecum* L.) is a winter legumes (AL-Hafody and AL-Tae ., 2012) and it has yellow seeds. Fenugreek grow in south Europe and east Asia where consider the basic home land and 17-19 natural species of Fenugreek found in Iraq (AL-Tikrity et-al., 1981). Fenugreek seeds enhance the protection for Hypercholestromia and hyperglycemia (Mitra and , Bhattacharya 2006 ; Acharya et al, 2006) ,and treating for medicating diseases (Zargar et al ,1992), such as coughing and asthma (Al-Zahaby, 1990) . Fenugreek has been recognized as a high source of chrbohydrate , Iron , Biotin and Ascorbic acid (Doshi et al, 2012 ; Payal and Snehlat 2012). Also Fenugreek seeds improved milk production and body weight in goat and sheep (Alamer and Basiouni , 2005 ; Hassan et al, 2012). Fenugreek contains fiber and important source such as soluble and non soluble fiber (Kumar et al, 2008), It also contains lysine , faytic acid , sabonian steroids , Fats , Proteins Which help for synthesis testosterone Hormone (Chaloob et al , 2010). Fenugreek cause a significant increase in the rate of semeniferous tubules of testes in Albino mice (Kassem ,2010), and improved the semen traits in aged broiler breeder males(Abdul –Rahman et al, 2010) . I didn't get any study on effect of Fenugreek

Seeds in semen quality in ram; Therefore, this study aimed to investigate the effect of Fenugreek seeds in semen quality in male Awassi sheep in Iraq .

Table (1): Composition Of ration using in experiment.

Ingredients	group (1) %	group (2) %	group (3) %
Fenugreek seeds	0	5	10
Black barley	60	59	50
Bran	30	28	35
Soybean meal	8	6	3
Lime stone	1	1	1
Salt	1	1	1
Total	100	100	100
Crude protein%	14.79	14.80	14.94
Metabolic energy Kca/ 1 Kg	2572	2601	2572

Materials and Methods

This study was conducted at the animal farms of Animal production Department – college of Agri & Forestry Univ. of Mosul during 15 of November 2011 to 15 of February 2012. 15 Awassi males , (2-3 years aged) and an average weight of 42.7 kg ; were divided randomly into three groups (5 animals / group). The rams housed in (6×3 m) barn / group and fed on three rations containing same crude protein and metabolizable energy but different in Fenugreek seeds percentage (0 , 5 and 10 %) , and straw as roughage was offered at 250 gm/ head/ day for all ram in groups ,Chemical composition for concentrate diet was calculated by Al-Khawaja ,*et al* (1978) table (1). Semen sample were collected by Electro Ejaculator once weekly along the study Period. The semen was kept in a water bath at 37° C until evaluation of all samples in field laboratory. The ejaculated semen volume was recorded immediately after collection in a graduated collection vial . semen consistency was determined through vial and divided into three graduating (watery0-1)(milky1-2)(creamy2-3) according to (AL-Moteoty,2009). individual motility of Sperm was determined by mixed one drop of semen and one drop of (2.9% sodium citrate) on warmed slide at 37° c and placing a cover slip on it under microscope magnification ×40 , Mass motility of sperm was determined by drop of semen on warmed slide at 37° c under microscope magnification ×100 according to (Campbel *et al*, 2003). Sperm concentration was determined by Haemocytometer after diluting and counting in 80 small squares observing at ×400 magnification according to (Ijam *et al*, 1981).

Live , Dead and Abnormal of spermatozoa was determined by mixed one drop of semen and one drop of stain (Eosin 1%, Nigrosin 2%) on warmed slide at 37° c and then left to dry and count Live , Dead and Abnormal of spermatozoa percentage All slide examined and at least 200 spermatozoa per slide under microscope magnification ×1000 according to (Chemineau *et al*, 1991). Statistical analysis was done by of one analysis of variance and specific group difference were determined by Duncan multiple range test (1955) at $P \leq 0.05$ significant level by using SAS program (2000).

Results and Discussion

Table (2) showed a significant differences ($P \leq 0.05$) in semen characteristics between three treatment groups .

Fenugreek Seeds treatment enhance significantly the ejaculated semen volume to (2.06 , 2.02 ml) in T3 and T2 respectively compared with the control group (1,52 ml). The significant increase in semen volume was due to the effect of Fenugreek Seeds on the testes and accessory glands which causes an increase in secretion because Fenugreek contained mineral salt Which increased accessory gland weight in white mice (Jawad , 2007). Results showed no significant effect in both treated groups (Fenugreek Seeds 10% and 5%) on sperm concentration compared with the control group (Table – 2).

Results showed a significant affect ($P \leq 0.05$) improvement in consistency of semen from (1.82) in control group to (2.25 , 2.05) in 10% and 5% Fenugreek Seeds treatment respectively both treated groups Table (2) improvement consistency because a positive significant correlation between consistency of semen and concentration of sperm (Youngquist and Threlfall, 2007 ; Sorensen , 1979). Fenugreek Seeds enhance significantly ($P \leq 0.05$) the spermatozoa individual motility to (92.1, 90.88) in T3 and T2 respectively compared with the control group (75,01) (Table 3).

Table (2): Effect of Fenugreek seeds on some semen quality (Mean \pm SE).

Treatments	Characteristics			
	Ejaculation Volume(ml)	Consistency of semen	Sperm concentration (10^9 x/ml)	individual motility%
significance	*	*	N.S	*
Control 0%	1.52 b 0.11 \pm	1.82 c 1.07 \pm	3.9800 a 54.75 \pm	75.01b 2.99 \pm
Fenugreek Seeds 5 %	2.02 a 0.20 \pm	2.05 b 0.05 \pm	5.6912 a 39.74 \pm	90.88 a 1.13 \pm
Fenugreek seeds 10%	2.06 a 0.89 \pm	2.25 a 0.05 \pm	5.6401 a 68.47 \pm	92.1a 0.60 \pm
Average of means	1.89 0.08 \pm	2.06 0.04 \pm	5.145 35.83	86.76 1.41 \pm

Means within different letters within grouping differ significantly ($p < 0.05$).

Fenugreek Seeds caused an increased in thyroxin hormone (Basch *et al*, 2003 ; Kassem , 2010). Because it works to multiply the abundance of sertoli cells and ledge cells of your hands in the postpartum (Palmero, et al 1995 ; Buzzard , et al 2003). In addition to be performed of sexual hormone and Fenugreek contained sabonin steroids (Al-Obaidi , 2010). which affected to sexual hormone testosterone and caused significant increase in sperm individual motility of rams (Fallah-rad , *et al* 2001). Live sperm percentage in treatment groups were significantly higher than control group . and The highest live sperm was observed in T2 (Table – 3). Dead and abnormal spermatozoa (table 3) were significantly ($P<0.05$) decrease from in both groups compared with control group. In details, the maximum values of dead and total abnormal sperms were recorded in control group (17.21, 7.22) respectively compared with treatment Fenugreek Seeds 10% (10.47, 2.90) respectively and treatment Fenugreek Seeds 5% (5.77, 3.67) respectively . the decreased of in dead and abnormal sperm may be due to the potent antioxidant activity of fenugreek seeds to reduced malondialdehyde (MDA) level Which consist of Lipid peroxidation in testis tissues (Taha , 2008). Fenugreek seeds was affected on axes (hypothalamus- pituitary - testes) which affected on producing sperm (Abed, et al 2009).

In conclusion, Fenugreek seeds in rations (10% and 5% gm/kg) improves the semen characteristics(volume , consistency ,mass and individual motility of spermatozoa , sperm concentration, percentages of live , dead , and abnormal spermatozoa) in Awassi rams in addition it may be considered as a new step in field of reproduction of Awassi rams in Iraq .

Table (3): Effect of Fenugreek seeds on some semen quality (Mean \pm SE).

Treatments	Characteristics			
	Mass motility	live sperm (%)	dead sperm (%)	Abnormal Sperm(%)
significance	*	*	*	*
Control %0	3.47b 0.20 \pm	82.89 b 6.43 \pm	17.21 a 0.30 \pm	7.22 a 0.42 \pm
Fenugreek seeds %5	4.27a 0.11 \pm	94.05 a 0.56 \pm	5.77 c 0.27 \pm	3.67 a b 0.36 \pm
%10 Fenugreek Seeds	4.45a 0.05 \pm	89.23 a 0.23 \pm	10.47 b 0.27 \pm	2.90 b 0.23 \pm
Average of mean	4.11 0.09 \pm	86.7 2.41	11.13 0.92	4.47 0.33

Means within different letters within grouping differ significantly ($p<0.05$).

تأثير استخدام بذور الحلبة في بعض صفات السائل المنوي في الكباش العواسية خلال موسم الشتاء الخلاصة

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الخلاصة

هدفت الدراسة إلى معرفة تأثير ثلاث علائق ذات مستوى بروتين و طاقة متقاربة ومختلفة في نسبة إضافة بذور الحلبة (صفر , 5 , 10 %) للمجاميع الأولى والثانية والثالثة على التوالي خلال موسم الشتاء ولمدة من (2011/11/15 - 2012/2/15) واستخدم في هذه التجربة 15 كبشا عواسيا بعمر (2-3) سنة و أوزانها 50 – 55 كغم تم توزيعها عشوائيا إلى ثلاث مجاميع (5 كبش / مجموعة) وأظهرت نتائج الدراسة تأثيرا معنويا ($P \leq 0.05$) لإضافة بذور الحلبة في حجم السائل المنوي والقوام والحركة الجماعية والفردية والنسبة المئوية للنطف الحية والميتة والمشوهة وعدم وجود تأثير معنوي ($P \leq 0.05$) لإضافة بذور الحلبة في تركيز النطف / مل للسائل المنوي بالمقارنة مع مجموعة كباش السيطرة. الكلمات المفتاحية: بذور الحلبة، السائل المنوي، الاكباش.

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