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Research Article

STUDY OF SOME SEMEN TRAITS OF AL-AL-KRISHI AND AL-WASSI RAMS AND BATTERED RAMS

Yasser Ammar Ahmood AL-Janabi*, Haider M.H. Habeeb and Rahman H.H. Al-Qasimi

Department of Animal Production, College of Agriculture, Al-Qasim Green University, Iraq

Abstract

The current study was conducted at Khairat Al-Etihad station in Al-Shomali district - Babylon. (12) rams were used in the study, including (4) Al-Al-Krishi (4) AL-Wassi and (4) battering rams (AL-Wassi-Al-Krishi) for the period from January 2023 to April 2023. To study semen physical and chemical traits such as ejaculate volume, percentage of live, dead, and deformed sperm, concentration, and group and individual motility, pH, Aspartate aminotransferase (G.O.T), alanine aminotransferase (G.P.T) and alkaline phosphatase (ALP). The results indicated that the best characteristics of the seminal fluid were of the AL-Wassi rams in terms of concentration and ejaculate volume, while the beating rams excelled at a significant level (P>0.01) in individual and group motility and the percentage of live sperm, while the highest percentage of dead and deformed sperm was recorded in the Al-Krishi rams, and the correlation coefficient was high between The AL-Wassi and Al-Al-Krishi rams and low between the battered rams and the AL-Wassi and Al-Al-Krishi rams.

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1. Introduction

Rams fertility is one of the main pillars in increasing the fertility and productivity of the herd. The fertility of rams lies in their high ability to fertilize and the quantity and quality of semen produced by the testicles (Al-Samarrae, 2009). The use of rams with high semen characteristics will lead to an increase in the fertility of the herd (Avdi *et al.,* 2004). Semen classifications differ according to genetic and environmental factors (Adriana *et al.,* 2010). In addition, the production of semen is affected by age and body weight, Body weight is more important than age because of its relationship to sexual maturity. The better the rate of body growth in lambs, this helps them reach sexual maturity at an early age and their early production of semen. The evaluation of semen, especially at early ages (Gundogan, 2007).

It is one of the important things that can be relied upon to predict the fertility of rams on the one hand, and to exclude rams with poor characteristics and reduce breeding costs on the other hand. Sperm motility, speed, and concentration are among the most important characteristics of semen, as they are associated with fertility (Hassani *et al.,* 2013). Numerous studies have been conducted on the characteristics of the semen and its evaluation, as this is one of the means of fertilization of rams (János Olá *et al.,* 2010), and the results of those studies have varied

**Corresponding author*: Yasser Ammar Ahmood AL-Janabi

E.mail: yasir.amar@agre.uoqasim.edu.iq

according to the type of sheep and the environmental conditions, as in the study of Al-Samarrae (as the characteristics of the semen differed for two types of sheep living in themselves, just as the There is a difference in its characteristics for the same breed of sheep (Awassi), which spread outside its original habitat in the Middle East to Central Europe (Hungary), and they are two different regions in temperature, as in the study of (Mauryal *et al.,* 2013), who mentioned that one of the reasons for this discrepancy is the effect of sheep In season factors such as photoperiod and temperature Most studies of semen characteristics have been conducted in different regions of the world on the basis of dividing the year according to its four seasons (Moghaddam *et al.,* 2010) or on a monthly basis (Mauryal *et al.,* 2013), except that the spring and autumn seasons are in the climate of Iraq's features are not clear and they only last for a short period of time and they are almost indistinguishable on the one hand, and on the other hand, the studies on a monthly basis may not represent the reality of climatic effects on the natural characteristics of semen because the process of sperm formation needs a period longer than a month (Pourseif and Moghaddam, 2012).

2. Materials and Method

The experiment was conducted in the fields of Khairat Al-Etihad Company in Al-Shomali – Babylon Governorate, using 21 mature local rams, with ages ranging between 2 - 5 years and weights ranging between 40 - 60 kg. The rams were divided into three groups: 7 Al-Krishi, 7 AL-Wassi, and 7 mixed with Al-Krishi. Rams were trained to collect semen from rams using an electrical stimulation device according to Fourie *et al.* (2004) and Kridli *et al.* (2006). After all samples were processed, the semen was transferred directly to the laboratory adjacent to the field, which contains all requirements for the following tests on semen.

Physical evaluations

The volume of semen (ml): used the graduated tube to collect estimate semen, Semen concentration: measuring sperm concentration according to the Color Meter methods of Elmaz *et al.* (2007). Mass activity: measuring sperm motility according to Loskutoff *et al.* (2001), while Individual Motility measuring according to Mohamed (1980). Live, Dead and Abnormal Sperm Percentage were estimated according to the method of Al-Qassab *et al.* (2007).

Biochemical Evaluations

Commercially available colorimetric kits Analytic on Biotechnologies company, (Linear , Spain) were used to measure Serum Aspartate aminotransferase (G.O.T), alanine aminotransferase (G.P.T) and alkaline phosphatase (ALP)activities according to the methods of (Panteghini *et al.,* 1983; Young, 1995; Sherman, 1999).

Statistical analysis

The statistical analysis of data on semen characteristics was carried out using the General Linear Model (GLM) equation within the statistical program (Anonymous, 2005).

3. Results and Discussion

Effect of genetics group on semen physical traits

Ejaculate volume

The statistical analysis of the results of the current study showed that there were no significant differences ($P < 0.05$) in the volume of the ejaculate among the studied rams. The highest value of the volume of the ejaculate was recorded in the AL-Wassi rams (2.037 ± 0.067), while the lowest value was recorded for the volume of the ejaculate (1.887 ± 0.086) in the battered rams.

The general average ejection volume of the studied rams was identical to what was found by (Tabbaa *et al.,* 2006; El-Saidy, 2004), as the recorded rates were 1.12 ± 0.06, 1.00 ± 0.1 and 12 ± 0.1 ml, respectively, while it was higher than what was found by each of (El-Saidy, 2004), which is identical to the AL-Wassi rams, and less

than what was found by (Gundogan and Serteser, 2005), when he found an average volume of the projectile of 1.8 milliliters, which is identical to the battered rams.

Mass activity

The results of the study showed significant differences between the rams at (P>0.05) in the Mass activity percentage, the battered rams recorded a significant superiority in the percentage of Mass activity compared to other rams (90.208 ± 0.704 %), while there was no significant difference between the AL-Wassi and Al-Al-Al-Krishi rams. The AL-Wassi rams showed the lowest rate in the percentage of mass movement, reaching (85.208 ± 0.974 %) shown Table - 1. While individual motility, the results of the study indicated that there were significant differences (P<0.05) in the percentage of individual motility, the battered rams recorded a significant superiority in the percentage of individual motility (90.001 ± 0.602%) over the AL-Wassi and Al-Al-Krishi rams, and the Al-Al-Krishi rams showed the lowest rate of sperm motility. The percentage of individual motility among rams was (84.167 ± 1.401%), but it did not differ significantly from AL-Wassi rams, shown in Table - 1. The results of the study were similar to what was found by (Tabbaa *et al.,* 2006), as the percentage was 1,879.4 %, and the individual motility rate was higher than what was recorded by Tabbaa *et al.* (2006). The rate of mass activity was higher than what was recorded by Gundogan and Serteser (2005), as the rates recorded by previous researchers were 0.6873.46 % and 72.7±3.8 for individual motility and mass activity, respectively, and it was higher with us. The percentages were lower than those recorded by Kridli *et al.* (2004), as it recorded 80.68 ± 3.76 and 84.09 ± 3.49 % for group and individual motility respectively.

Semen concentration

The results of the study indicated that there were no significant differences (P<0.05) for the sperm concentration, in which the AL-Wassi rams recorded the highest rate of sperm concentration (3.639 ± 0.247) sperms/ml, while the Al-Krishi rams showed the lowest rate of these sperms (3.205 ± 0.176) sperms/ml (Table - 1). The results of the current study did not agree with what was found by El-Saidy (2004), while it was higher than what was observed by Tabbaa *et al.* (2006); Tabbaa *et al.* (2006.) It was 0.23.2 and 0.312.91, respectively, and lower than what was found by other researchers (Kridli *et al.,* 2004), as it was 206.2.

Table - 1: Means ± standard error effect of genetics group on semen physical traits of AL-Wassi, Al-Al-Krishi and their crosses (Al-Al-Krishi and AL-Wassi)

Strain Traits	Mean±S.E.			Level Significantly
	AL-Wassi	Al-Al-Krishi	Mixtures	
Ejaculate volume	0.067±2.037	0.033±1.912	0.086±1.887	NS
Semen concentration	0.247±3.639	0.176±3.205	0.197±3.349	NS
Mass activity	0.974±85.208b	1.056±85.625b	0.704±90.208a	**
Individual motility	1.012±85.103b	1.401±84.167b	0.602±90.001a	**
Live Sperm Percentage	1.010±84.833b	0.809±80.958a	0.664±85.333a	**
Dead Sperm Percentage	1.009±15.167b	0.809±19.042b	0.663±14.667a	**
Abnormal Sperm Percentage	0.803±14.625b	0.813±18.292b	0.687±14.125a	**

Live and Dead Sperm Percentage

The results of the statistical analysis showed a significant increase (P < 0.05) in the percentage of live sperm in the club rams (85.333 ± 0.664 %) compared to the AL-Wassi and the Al-Al-Krishi rams, which did not differ significantly in comparison and was the lowest percentage in the Al-Al-Krishi rams (80.958 ± 0.809 %) (Table - 1). The general rate of the percentage of spermatozoa for the current study. It was within the normal limits of semen characteristics, as it came close to what was recorded by the researcher

(El-Saidy, 2004), as the recorded percentage was 5.6 0.8, as it was 0.244.15. Recorded by the researcher (Kridli *et al.,* 2004) and recorded an average of 6.9 0.4 %. The reason may be attributed to the effect of temperature on the adaptation of the thermoregulatory mechanism of the testis in males and its ability to adapt to the temperatures of the region, which leads to a decrease in the percentage of dead sperm in the summer and a rise in the winter and spring seasons.

The results showed a statistical analysis of a significant decrease in the percentage of dead sperm ($P < 0.05$) in the beaten rams (14.667 ± 0.663 %) compared to the AL-Wassi and Al-Al-Krishi rams, which did not differ significantly in comparison and was the highest percentage in the Al-Al-Krishi rams (19.042 ± 0.809)% Table (1) , while Abnormal Sperm Percentage, the results showed a significant decrease ($P < 0.05$) in the beaten rams (14.125 ± 0.687)% compared to the AL-Wassi and Al-Al-Krishi rams, which did not differ significantly in comparison, and the highest percentage was in the Al-Al-Krishi rams (18.292 ± 0.813)% Table - 1.

Abnormal Sperm Percentage in this study was within the normal range of what was found by some researchers (Marco-Jimenez *et al.*, 2005; Karagiannidis *et al.*, 2000) as it was 1.09.1 and 7.01 0.20 % and what was found by Tabbaa *et al.* (2006) amounting to 2.90 0.14 and less than what the researcher found it as 18.10 2.0, and the researcher (El-Saidy, 2004) found a rate of malformations of 15.5 0.7 %. The percentage was lower than that recorded by Gundogan and Serteser (2005), as it recorded an average of 2.10 % abnormal Sperm Percentage. An important effect on the percentage of deformed sperm with age, as the percentage of abnormalities rises at the beginning of sexual puberty due to the incomplete development of parts of the reproductive system, and decreases directly at the age of eight months, in addition to the important effect of temperature, as the percentage of abnormalities decreases in the summer compared to other seasons of the year (Kridli *et al.*, 2007).

Effect of genetics group on semen chemical traits

The results of the statistical analysis showed that there were no significant differences at the level ($P > 0.05$) in the biochemical characteristics of semen, where the highest concentration of G.O.T enzyme and G.P.T enzyme was recorded in battering rams (26.958 ± 7.065 and 38.792 ± 7.289) units/liter, respectively, while the lowest concentration of G.O.T enzyme was recorded. In Awassi rams (14.625±2.546 units/liter) and the G.P.T enzyme in the Kreishi ram (25.792 ± 2.692 units/liter), while the A.L.P enzyme had the highest concentration in the Awassi rams and the lowest in the Kreishi (41.792 ±10.073 and 25.875±7.203) units/liter respectively as shown in Table - 2. The results of this study indicated a decrease in the level of G.O.T and G.P.T enzyme in the temperate season compared to the hot season, and these results were consistent with the findings of Zhang *et al.* (2016); Nena Bester (2006); Rege *et al.* (2000). The process of liberation of G.O.T enzyme into seminal plasma is low when the motility rate is high and there is a relationship between the level of G.O.T and the fertility rate, and this may be attributed to the fact that rams that have good semen because the amount of G.O.T is high in tents compared to afferent plasma (Taha *et al.*, 2000).

Table – 2: Means ± standard error effect of genetics group on semen chemical traits of AL-Wassi, Al-Al-Krishi and their crosses (Al-Al-Krishi and AL-Wassi)

Strain / Traits	Mean±S.E.			Level Significantly
	AL-Wassi	Al-Al-Krishi	Mixtures	
pH	0.058±6.917	0.077±6.833	0.098±6.708	NS
G.O.T concentration (unit/L)	14.625±2.546	17.042 ± 4.017	26.958±7.065	NS
G.P.T concentration (unit/L)	28.458±4.732	25.792±2.692	38.792±7.289	NS
ALP concentration (U/L)	41.792±10.073	25.875±7.203	26.125±4.551	NS

4. Conclusion

Our findings indicate that the best characteristics of the seminal fluid were of the AL-Wassi rams in terms of concentration and ejaculate volume, while the beating rams excelled in individual and group motility and the percentage of live sperm, while the highest percentage of dead and deformed sperm was recorded in the Al-Krishi rams.

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