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"Estimation of Serum Cholesterol, Glucose and Triglyceride in Assaf Sheep in Palestine"

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Abstract:

The current study was conducted on 95 clinically normal Assaf sheep to evaluate serum level of glucose, cholesterol and triglyceride level. Ninety-five sheep were divided into males; 14 ram lambs and rams, 81 females; ewe lambs, pregnant (27), non-pregnant ewes (54), aged from four months to four year old. The sample were collected from September 2020 to October 2020, and the serum were used for measurement of glucose, cholesterol and triglyceride level.]. The results revealed that the range and mean of these tests were as follow glucose; [(5.65-98.21)mg/dl, 53.14], cholesterol; [(36.01-252.9)mg/dl, 127.94], triglyceride; [(1.39-134.27)mg/dl, 28.71]. Assaf sheep needs more attention and support in Palestine to optimize its productivity.

Introduction

Palestinian farmers raise and breed livestock as a source of food and income.

Assaf breed of dairy sheep, originating from a cross consisting of the Awassi and East Friesian, breeds was developed in Israel during the 1950s and 1960s.

Characteristics of Assaf sheep:

- It is hardy, strong, medium sized, white uncolored sheep with no horns animals well adapted to their local climates.
- produces an average of 450 liters of milk annually.[3] It's raised for milk mainly, but are also prized for quality meat production.

Objective

- Therefore the objective of this study was Establishing reference value of blood biochemical profile (glucose, cholesterol and triglyceride) in Assaf sheep.
- The main uses of clinical biochemistry in sheep health management are in the diagnosis of liver, muscle and nutritional disorders
- In this research blood samples were collected from 95 clinically normal Assaf sheep, selected randomly from different areas of West-Bank. Assaf breeds got many different types and formulas, as popularity mix food; (hay, straw, soya, barley, bran, corn, and wheat), concentrated food, concentrated with straw, or grazing. In addition to different combination patterns for these four type of feeding formula; ex: (Barley, soya, concentrated food), (popularity food, hay), (gazing, concentrated food) …etc.

Material and Methods:

STUDY AREA AND ANIMAL MANAGEMENT:

- Animals involved in the study belonged to all Palestine city (west bank) , The study was conducted during the month of October 2020. animals with different type of feed , different age , different sex and different condition (pregnant , nonpregnant , lactation)
- The climate was not taken into consideration.

Material and Methods:

- **SAMPLE COLLECTION AND LABORATORY ANALYSIS**
- A total of 95 , aging from Four month to four-year-old, male (14) ,female (81) pregnant (27), non-pregnant ewe (54) were used in the study. The sheep's were randomly chosen from several farm from cities of Palestine in various type of feed . A complete physical examination was performed on all animals to detect any abnormal signs.
- Blood samples were only taken from apparently healthy animals.
- three to five milliliters of whole blood was collected aseptically from the jugular vein using disposable needles gauge(23) and sample was placed in plain tubes without anti-coagulant.
- Serum was obtained by allowing the blood to clot in room temperature for 2 hours, centrifuged, and collected in a special epindorf tubes. Serum samples were stored at -20 C until used.
- Serum levels of cholesterol , glucose and triglyceride were determined using spectrophotometer method using available kits (QUIMICA CLINICA APLICADA S.A) following manufacturer's instructions.

STATISTICAL ANALYSIS:

- Data were expressed as means ± standard error of the mean and ranges.

- The effect of intensive selection and genetic manipulation compared to pure Assaf blood biochemical values were analyzed.

Results

Table 1: Serum values of glucose, cholesterol , triglyceride according to gender :

	Male (14)	female (81)
Glucose **Range :** **Mean :**	13.690 - 90.476 mg/dl 54.0391 ±6.23	5.65 - 98.214 mg/dl 52.9872±2.132
Triglyceride **Range :** **Mean :**	2.797 - 134.265 mg/dl 29.270 ±8.442	1.398 - 120.279 mg/dl 28.61 ±2.143
Cholesterol **Range :** **Mean :**	63.372 - 215.697 mg/dl 126.7857 ± 6.324	36.046 - 252.906 mg/dl 128.1388 ±2.135

Table 2: Serum values of glucose, cholesterol, triglyceride according to age:

	2-8 month (15)	1-4 years (80)
Glucose **Range :** **Mean :**	21.428 - 92.559 mg/dl 56.162 ±4.938	5.65 - 98.214 mg/dl 52.1361 ±2.458
Triglyceride **Range :** **Mean :**	11.188 - 134.265 mg/dl 34.142 ±7.242	1.398 - 120.279 mg/dl 27.523 ±2.158
Cholesterol **Range :** **Mean :**	63.372 - 252.906 mg/dl 127.223 ±9.117	36.046 - 237.209 mg/dl 126.984 ±5.406

Table 3 : Serum values of glucose, cholesterol, triglyceride according to ewe sheep condition:

	Np(54)	P(27)
Glucose **Range :** **Mean :**	5.654 - 98.214 mg/dl 54.563±2.861	14.285 - 96.130 mg/dl 49.8347 ±4.1
Triglyceride **Range :** **Mean :**	2.797 - 120.279 mg/dl 27.920 ±2.70	1.398 - 72.722 mg/dl 29.992 ±3.46
Cholesterol **Range :** **Mean :**	36.046 - 252.906 mg/dl 130.860 ±6.698	37.209 - 230.814 mg/dl 122.695 ±8.582

Table 5: Serum values of glucose, cholesterol, triglyceride according to type of feed:

	Glucose mean	Triglyceride mean	Cholesterol mean
*C n=8	66.4063 ±7.877 mg/dl	22.3776 ±3.39 mg/dl	111.4099 ±13.466 mg/dl
*G n=13	51.2134 ±6.146 mg/dl	33.8892 ±8.164 mg/dl	113.4615 ±16.152 mg/dl
*L n=26	39.9725 ±3.598 mg/dl	29.3706 ±3.019 mg/dl	133.6986 ±9.997
*C+h n=31	57.1813 ±3.307 mg/dl	29.2101 ±2.85 mg/dl	129.4342 ±4.354 mg/dl
*c+h+n n=9	71.8254 ±5.581 mg/dl	26.5734 ±4.267 mg/dl	101.938 ±9.78 mg/dl
*B+p+w n=8	49.1443 ±5.945	25.8741 ±3.909 mg/dl	157.7253 ±11.752 mg/dl

Discussion

Table 1 :

Serum level of glucose, triglyceride and cholesterol were presented according to age as follow;

- glucose; male; 54.04 ±6.23, female; 52.98±2.13,
- cholesterol; male; 126.78±6.32, female; 128.14±2.14,
- triglyceride; male; 29.27±8.44, female; 28.61±2.14.

Many factors affect serum level of glucose, triglyceride and cholesterol level for example; it's higher in males than in females although females ewe need high-quality nutrition system as it's a source of milk production and reproduction.

Table 2:

Serum level of glucose, triglyceride and cholesterol were presented according to age as follow;

- 2-8month; 56.16±4.94, 34.14±7.24, 127.22±9.11 respectively,
- 1-4year; 52.14±2.45, 27.52±2.16, 126.98±5.41 respectively.

This may indicate that the younger sheep usually receive better nutrition supplements than older sheep.

Table 3 :

With pregnant ewe sheep serum values of glucose, triglyceride and cholesterol is lower than non-pregnant ewe, because pregnant sheep may consume more nutrient for their fetuses; pregnant; 49.83±4.1, 29.99±3.46, 122.69±8.58 respectively, non-pregnant; 54.56±2.86, 27.92±2.7, 130.86±6.69 respectively. Table 4.

Table 4 :

- We found that the glucose level is highest with concentrated feed +straw+corn (c+h+n) nutritional system.
- However cholesterol level is lowest with this system.
- The highest triglyceride level were with graze (G) nutritional system.

This may reflect the fact that the nutritional systems of sheep in Palestine is still under development and needs further corrections and enhancement in term of farmers education and nutritional support.

Conclusion:

In conclusion we recommend that Assaf sheep in Palestine need more support to exploit the full biological potential of the Assaf for both lamb and milk production. And more research need to be done to provide more informations about this type of sheep as it's one of the most important and reproductive sheep in Palestine.

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