An Najah National University
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Estimation of Serum Liver Enzyme Activities in Assaf Sheep AST, ALB,GLOBULIN,TP in State of Palestine

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Introduction

- Most of the Palestinian population are farmers who depend on livestock products as it is the first source of income.

- Assaf sheep are considered the most numerous and indigenous breed in Palestine.

Introduction

- They are multipurpose breed, used for meat, milk and wool production , with high adaptability to local environment and nutrition.

- Assaf breed is a cross between Awassi and East Friesian which was developed during the 1950s and 1960s.

Introduction

- **Feeding and nutritional programs have a different planes according to many reasons :**

- **The purpose and classification of the animal** : meat, dairy , pregnancy period, drying period ...etc.

- **The total cost** of the diet and the financial gain.

- **The customs and traditions** to which the farmer toke on .

- **Availability** of the pastures.

Introduction

- **The current study was conducted on normal Assaf sheep to evaluate serum activities of :**
    1. Aspartate amino transferase (AST)
    2. ALBUMIN(ALB)
    3. Globulin
    4. Total protein (TP)

- Those enzymes are considered as biomarkers of the hepatic affections .

Introduction

- **Aspartate transaminase (AST):** present in hepatocytes, red blood cells, and in cardiac and skeletal muscles.

- **albumin(ALB):** mostly coming from bones (skeleton) and found in the liver. Elevated by liver diseases, bile duct obstruction, gallbladder diseases, or bone disorders.
- **Globulin**

- **Total protein (TP):** measures the total amount albumin and globulin in your body. Elevated in kidney or liver diseases.

Study Objectives

- The objectives from these study is to evaluate serum liver enzymes , AST, ALB,GLUBULIN, TP in assaf sheep herds in Palestine according to many scales , standards and the nutritional planes .

- Evaluate the notional effects , quality , compare it with the international results.

Materials and Methods

1. Sheep herds divided into :

- Males: rams
- Females: ewe lambs, pregnant and non-pregnant ewes .
- The age ranges were(2m – 6y) .

Materials and Methods

2. **Blood samples** collected into plain tubes from jugular vein puncture from Assaf sheep .

Materials and Methods

3. **Sera separated** after centrifugation for 5 minutes at 3000 rpm , then used directly for measurements of serum.

Materials and Methods

4. Then used directly for **measurements** of the serum **ALT**, **ALB**,**GLOBULIN** and total protein (**TP**).

- Working procedures done according to the manufactural instruction .

Materials and Methods

5. Reading were determined according to the spectrophotometer device .

Materials and Methods

6. The information has been emptied in the Excel program to be studied, analyzed and figure out the final results**.**

Results and Discussion

The serum values of the measured liver enzymes **AST, ALB,GLOBULIN and TP** in clinically healthy Assaf sheep independently according to many standers :

- Serum values activities.
- Serum values activities according to sex.
- The effect of age on serum liver enzymes activities in male Assaf sheep.
- The effect of age on serum liver enzymes activities in female Assaf sheep.
- serum liver enzymes activities according to physiologic status in Assaf sheep.

Results and Discussion

Table, 1: Serum values of AST, ALB, GLOBULIN, TP activities in Assaf sheep.

Liver enzymes	N. of sheep	Range	Mean	Control value Range and mean in awassi
Serum AST (U/L)	61	7-121 U/L	19.6129	25-220 u/l 71.83
Serum ALB (G/DL)	198	2.2-10.8 G/DL	6.5	59 – 300 G/DL 139.86
GLOBULIN	198	-5.7-5.2	-1.4	38·8 - 51·3 G/DL
Serum TP (U/L)	198	2.1-10.7 U/L	5.1	5.37-931 u/l 7.06

Results and Discussion

Table,2: Serum values of AST, ALB,GLOBULIN ,TP activities according to sex in Assaf.

Gender	Liver enzymes			
	AST	ALB	GLB	TP
Male Range Mean N.	12-60 U/L 18.3 (n=11)	2.2-10.3 U/L 6.4 (n=39)	-5.7-5.2 G/DL -1.4 (n=39)	2.4-9.3 U/L 5 (n=39)
Female Range Mean N.	7-121 U/L 19.6129 (n=50)	3.7-10.8 U/L 6.6 (n=159)	-5.7-5.2 G/DL -1.5 (n=159)	2.1-10.7 U/L 5.1 (n=159)

Results and Discussion

Table 3:The effect of age on serum liver enzymes activities in male Assaf sheep

Age	Liver enzymes			
	AST	ALB	GLB	TP
2-8 months Range Mean N.	12-60 U/L 18.30 (n=9)	2.2-8.3 U/L 6.4 (n=26)	-5.7 – 5.2 g/DL -1.4 (n=26)	2.4-8.3 U/L 5 (n=26)
1-3 years Range Mean N.	16-31 U/L 19.595 (n=2)	3.1-10.3 U/L 6.5 (n=13)	-5.5 – 5.2 g/dl -1.4 (n=13)	3.3-9.3 U/L 5.1 (n=13)

Results and Discussion

Table 4:The effect of age on serum liver enzymes activities in female Assaf sheep.

Age	Liver enzymes			
	AST	ALB	GLB	TP
2-8 months Range Mean N.	13-80 U/L 26.066 (n=6)	3.9-9.4 U/L 6.9 (n=17)	-5.7 – 5.2 G/DL -1.6 (n = 17)	2.2-10.7 U/L 5.4 (n=17)
1-5 years Range Mean N.	13-39 U/L 16.377 (n=5)	3.7-10.8 U/L 6.7 (n=84)	-5.7- 5.2 g/ld -1.5 (n=84)	3-10.1 U/L 5.1 (n=84)

Results and Discussion

Table 5: serum liver enzymes activities according to physiologic status in Assaf sheep.

Groups	Liver enzymes			
	AST	ALB	GLB	TP
Rams Range Mean N.	12-60 U/L 18.3 (n=11)	2.2-10.3 U/L 6.4 (n=39)	-5.7-5.2 G/DL -1.4 (n=39)	2.4-9.3 U/L 5 (n=39)
Ewe pregnant Range Mean N.	13-121 U/L 19.615 (n=22)	4.2-10 U/L 6.6 (n=62)	-5.7 – 5.2 G/DL -1.5 (n=62)	2.8-9.4 U/L 5.1 (n=62)
Ewe non-pregnant Range Mean N.	7-80 U/L 19.63 (n=28)	3.7-10.8 U/L 6.6 (n=97)	-5.7 – 5.2 G/DL -1.5 (n=97)	2.1-10.7 U/L 5.1 (n=97)

Results and Discussion

The results obtained in the current study was lower than those recorded by international and control scientific paper.

Results and Discussion

This may be attributed to the fact that :

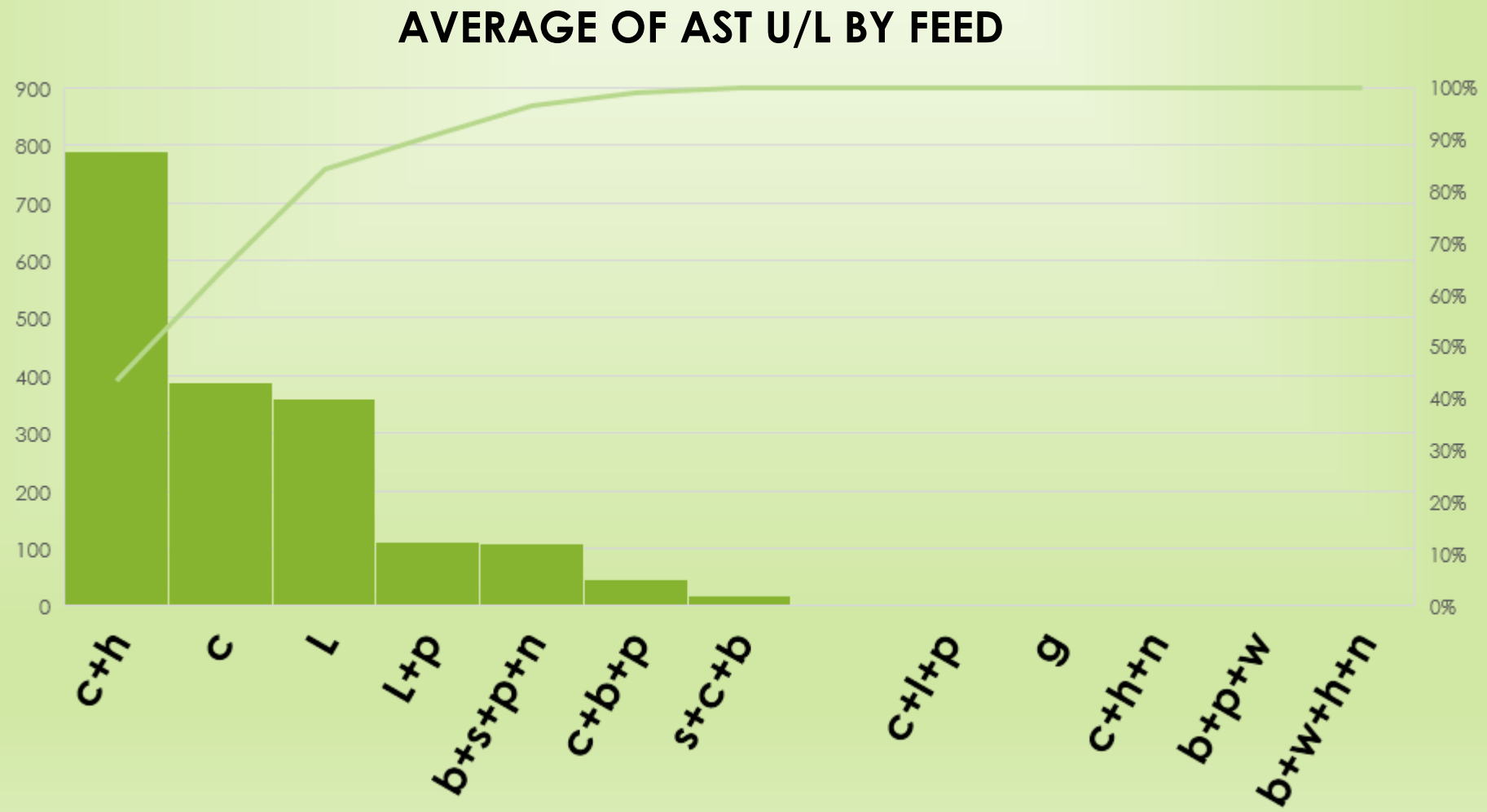
- The nutritional systems of sheep are poor quality.
- It doesn't managed correctly
- The traditional method
- Topography and climatic diversity in the different regions from which the samples were taken also affected the results.

Nutritional system with shortcuts in Assaf sheep

System n.	Nutritional system	Abbreviations
1	L	C: Fodder علف
2	C	L: popular شعبية
3	C+H	H: straw قش
4	S+C+B	G: Graze رعي
5	B+S+P+N	P: hay تبن
6	C+B+P	S: soy صويا
7	L+P	B:barley شعير
8	G	W: roughage نخالة
9	C+H+N	N: corn ذرة
10	B+P+W	A: Wheat قمح
11	B+W+H+N	
12	C+L+P	

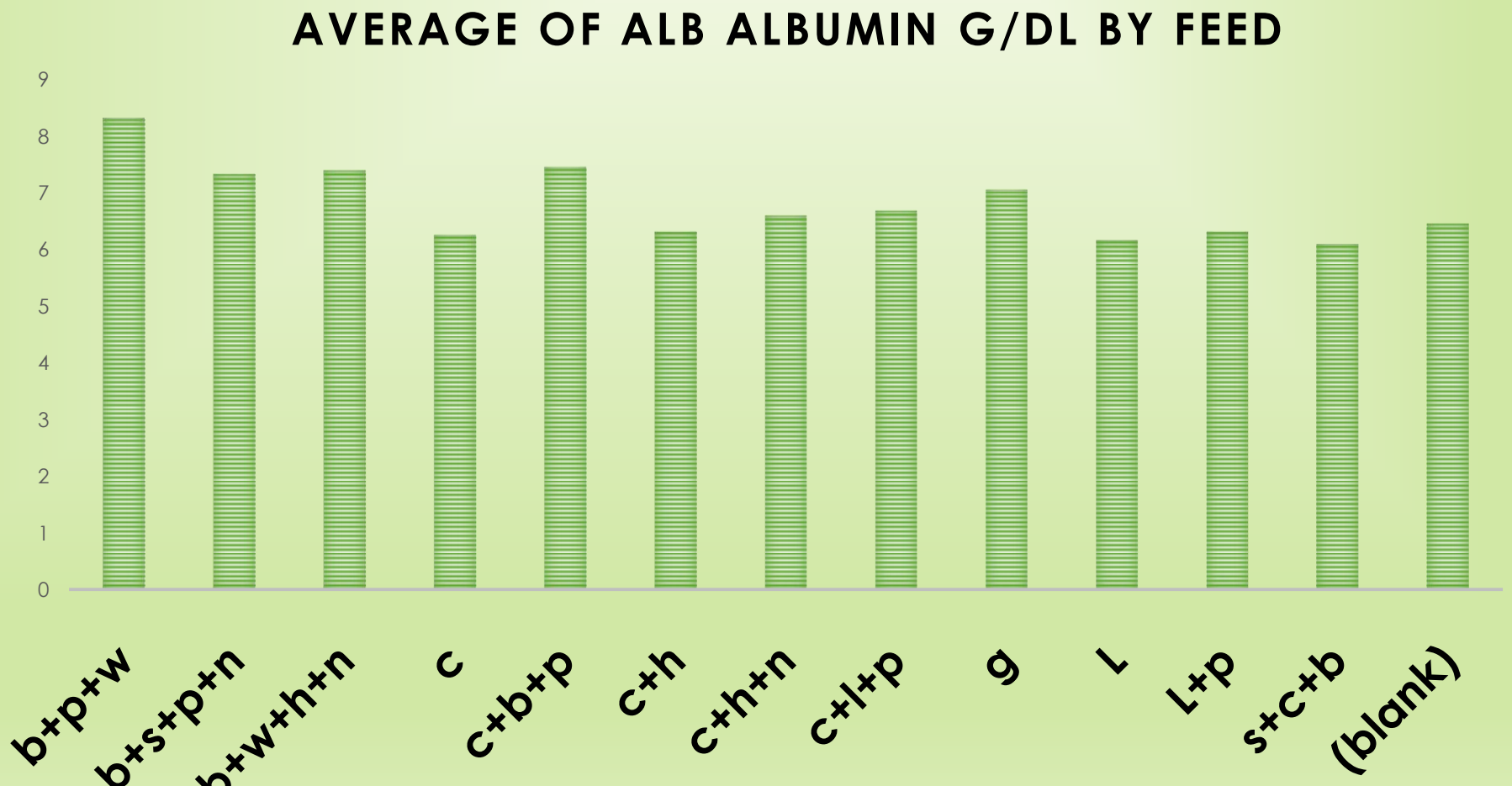
Results and Discussion

Chart 1



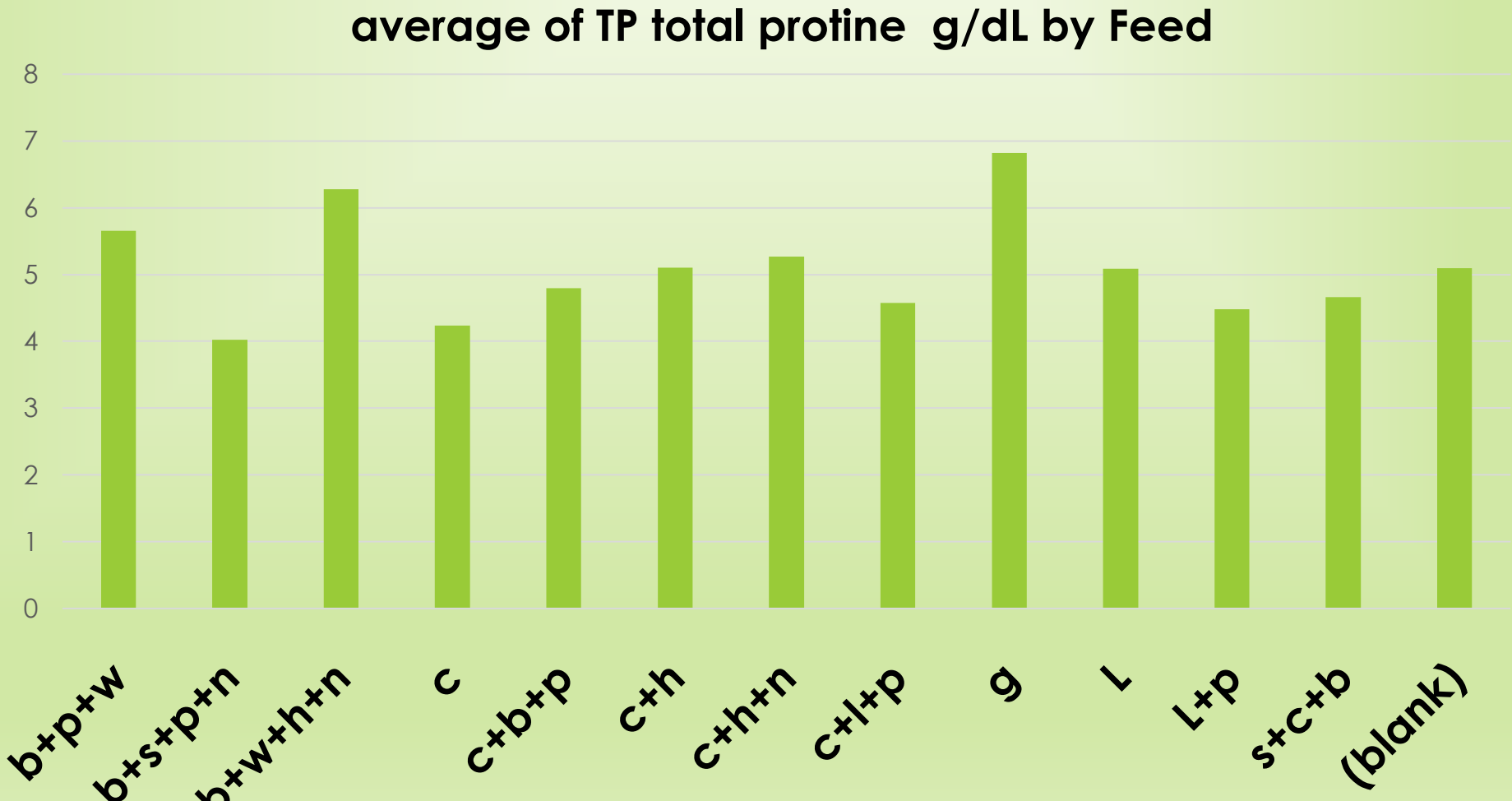
Results and Discussion

Chart 2



Results and Discussion

Chart 3



Future Aims

- According to our research and what was seen in the field, we hope this research to be a beginning step to highlight the nutritional plans in sheep farming and start a real action .

- And taking into consideration to improve the farmer's idea of investing in the food aspect, to obtain better results .

Acknowledgment

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