PHYSIOLOGICAL PERFORMANCE AND IMMUNO COMPETENCE OF GROWING BARKI SHEEP FED AZZAWI DATES IN SIWA OASIS

By

MOHAMMED SAEED ABO EL-FATH ZIDANE

B. Sc. Agric. Sc. (Animal Production), Minufiya University, 2004

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Approval Sheet

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This thesis for M. Sc. degree has been approved by:

Dr. Medhat Hussein Khalil …….

Prof. Emeritus of Animal Physiology, Faculty of Agriculture, Al-Azhar University

Dr. Farouk Abd-Allah Khalil …….

Prof. Emeritus of Animal Physiology, Faculty of Agriculture, Ain Shams University

Dr. Esam El-Din Tharwat Mohamed …….

Prof. of Animal Physiology, Faculty of Agriculture, Ain Shams University

Date of Examination: 28 / 4 / 2010

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Under the supervision of:

Dr. Esam El-Din Tharwat Mohamed

Prof. of Animal Physiology, Department of Animal Production, Faculty of Agriculture, Ain Shams University (Principal Supervisor)

Dr. Mohsen Shaker Abdel-Fattah

Associate Research Prof. of Animal Physiology, Animal and Poultry Production Division, Desert Research Center

ABSTRACT

Mohammed Saeed Abo-Elfath Zidane: Physiological Performance and Immuno Competence of Growing Barki Sheep Fed Azzawi Dates in Siwa Oasis. Unpublished M.Sc. Thesis, Department of Animal Production, Faculty of Agriculture, Ain Shams University, 2010.

This study was carried out to investigate the effect of partial substitution of crushed yellow corn (CYC) in concentrate feed mixture (CFM) with crushed date palm (CDP) at 50% (w/w) level on live body weight (LBW), thermoregulatory, hematological and some plasma biochemical parameters, thyroid activity, age at puberty, semen characteristics and early mating of Barki lambs. This study was performed during the period from April till December 2006 (244 days), in Siwa Research Station (Tegzerty Experimental Farm for animal production), belonging to Desert Research Center (DRC), Ministry of Agriculture and Land Reclamation, in corporation with Department of Animal Production, Faculty of Agriculture Ain-Shams University, Cairo, Egypt.

Forty-eight Barki lambs (18 males and 30 females) weaned at 121 days of age with average 20.96±1.31 and 19.04±0.50 kg body weight respectively were used in this study. Both sexes were divided randomly into two equal groups (9 male and 15 female in each). The first group served as control, while the second was fed experimental ration. One of two ration combinations (CFM) and berseem hay (Alfalfa) was offered to the control group in each sex, while the other ration combination (50% w/w of CDP replaced CYC in CFM) and berseem hay (Alfalfa) was offered to the treated group in each sex. The results showed that, level of blood plasma glucose (GLU) was higher (P<0.01) in the treated group (male and female) compared with the control group. Inclusion of CDP decreased (P<0.01) total cholesterol (CHO), triglycerides (Tri) and plasma total lipids levels (TL) compared with control group. Computed plasma globulin (GL) was higher (P<0.01) in treated group compared

with control group in both sexes. Minor increase occurred in total plasma protein in treated groups compared with control group.

The thyroid hormones activities, (T_3 and T_4) in blood plasma were increased with increasing body weight in both control and treated groups throughout the study period and were significantly ($P<0.01$) correlated with body weight. Regardless the effect of treatment, the results indicated that female lambs had the highest values in Hb, Ht and RBC's compared with male lambs. For female lambs, the mean values of Hb, Ht and RBC's were 18.24 g/dl, 34.25% and 12.36 X $10^6/mm^3$, respectively. The corresponding values for male lambs were 17.62 g/dl, 33.79% and 11.87 X $10^6/mm^3$.

Concerning the effect of treatment, the results indicated that the group means for Hb, Ht, RBC's, MCV, MCH and MCHC were similar in control and treated groups within the same sex

Concerning the effect of treatment on total leukocytes number, the results indicated that, in both sex, minor improvement was observed in the total WBC's number of lambs fed treated diet relative to lambs fed control diet.

Plasma testosterone concentration was higher (1.6 ng/ml) in control group than treated group (1.49 ng/ml) at first ejaculation, while at the second and third ejaculation, treated group had higher (1.84 and 1.98 ng/ml) than control group (1.63 and 1.89 ng/ml).

The results showed that inclusion of CDP in CFM at level 50% (w/w) caused positive effects on ejaculate volume, sperm motility and sperm concentration; this might be due to the presence of phytoestrogen, as a steroidal component of date stones, which may have influenced sperm parameters. The results clearly show that the inclusion of CDP in CFM at level (50%, w/w) caused higher (80%) conception rate compared with control group (53.33%).

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CONTENTS

ABBREVIATIONS

Abbreviation	Description
A/G	Albumin/globulin
AH	Abnormal head
AL	Albumin
ALT	Alanine aminotransferase
AN	Animal
AN(Mo)	Animal (Month)
AN(S*T)	Animal (sex*treatment)
AST	Aspartate aminotransferase
AT	Ambient temperature
Bas	Basophile cells
C	Control
CDP	Crushed date palm
CF	Crude fiber
CFM	Concentrate feed mixture
CHO	Cholesterol
CP	Crude protein
CYC	Crushed yellow corn
D	Day
d.f	Degrees of freedom
DFI	Daly feed intake
DLC	Differential leukocyte counts
DM	Dry matter
DMI	Dry matter intake
DS	Dead sperm
EE	Ether extract
Eso	Eosinophile cells
EV	Ejaculate volume
FCR	Feed conversion ratio
FW	Final weight
GL	Globulin
GLU	Glucose
Hb	Hemoglobin
HDL	High-density lipoprotein
HR	Heart rate
Ht	Hematocrit(Packed cell volume)
Kg/h/d	Kilogram per head per day
l/h/d	Liter per head per day
LBW	Live body weight

LDL	Low-density lipoprotein
Lym	Lymphocyte cells
M.S	Mean square
MCH	Mean corpuscular hemoglobin
MCHC	Mean corpuscular hemoglobin concentration
MCV	Mean corpuscular volume
Mo	Month
Mo*S	Month*sex
Mo*S*T	Month*sex*treatment
Mo*T	Month*treatment
Mon	Monocyte cells
NS	Non significant
Nut	Neutrophil cells
OADG	Overall average daily gain weight
OGR	Overall growth rate
OM	Organic matter
P4	Progesterone
P_{st}WADG	Post-weaning average daily weight gain
P_{st}WGR	Post-weaning growth rate
PTs	Plasma testosterone
PUN	Plasma urea nitrogen
RBC's	Red blood cells
RH	Relative humidity
RR	Respiration rate
RT	Rectal temperature
S	Sex
S*T	Sex*treatment
S.O.V	Source of variation
SC	Sperm concentration
SE	Standard error
SM	Sperm motility
ST	Skin temperature
T	Treatment
T_3	Tri-iodothyronine
T_4	Thyroxin
TA	Tail abnormal
THI	Temperature humidity index
TL	Total lipids
TP	Total protein
Tri	Triglycerides
TSA	Total sperm abnormality
TWG	Total weight gain

w/w	Weight/weight
WBC's	White blood cells

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