Tanta University
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Productive and reproductive performance of local sheep as affected by bee pollen supplementation.

By

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B.Sc. Agric. (animal production) Al-Azhar University. (2011)

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Abstract

The aim of this study was to evaluate the effect of oral administration of different levels of bee pollen (BP), during pre- and post-partum, on productivity and reproductive of Rahmni ewes as well as growth performance of offspring. Total of 21 ewes, at last six weeks of pregnancy, were divided into three groups (7 per group). Ewes in the 1st group were fed a basal diet without treatment (control, G1), while those in the 2nd (G2), and 3rd (G3) groups were fed the same basal diet beside a daily oral dose of 100 and 200 mg BP/gk BW, respectively. Feeding period started 4-6 weeks pre-partum until mating. Live weight (LBW) of ewes and lambs was recorded. Colostrum was analyzed and milk yield and composition were determined. Hematological parameters including, count of blood cells, red (RBCs) and white (WBCs), packed cell volume (PCV%), hemoglobin (Hb), mean cell volume (MCV), mean corpuscular hemoglobin (MCH), mean corpuscular hemoglobin concentration (MCHC), and differential leukocyte percentages were determined at weaning and mating. Concentrations of total proteins (TP), albumin (AL), urea and creatinine, and activities of alanine aminotransferase (ALT) and aspartate amino-transferase (AST) as well as Antioxidant status including MDA, GSH and CAT assayed in blood serum and some reproductive traits. Results showed that LBW of ewes during pre-partum, at lambing, suckling, weaning and post-weaning was not affected by BP. Contents of fat, protein, organic matter and total solids were the highest ($P<0.05$) in G3, while the lowest in G1. Average daily milk yield (ADMY) of ewes was not affected by BP. The ADMY decreased ($P<0.05$) only at the 7th week, showing the highest ADMY at the 3rd week. The milk fat and total solids contents only increased ($P<0.05$) in G2 and G3, being the highest in G3. Count of RBCs, and erythrocytic indices, except MCHC, were higher ($P<0.05$) in G3 than in G1 and G2, while WBCs count, lymphocyte percentage ($P<0.05$), GSH ($P<0.01$) and catalase ($P<0.01$) increased in G2 and G3 than in G1, being the highest in G3. Meanwhile, there was a decrease in neutrophils percentage, urea-N and MAD concentration in G3 than in G1 and G2. Post-partum 1st estrus/mating interval was affected significantly ($P<0.05$) by BP treatment, being the shortest in G3. Overall mean of P4 concentration was the highest insignificantly in G3, followed by G2, and the lowest in G1. BP treatment, especially at G3, was better on estrus/mating rate, lambing rate and litter size of ewes during May breeding season than G1 and G2. All growth performance parameters of lambs were not affected by treating ewes with BP.

In conclusion, oral dose of 200 mg bee pollen /kg LBW pre- and post-partum period has impact on milk yield, milk composition, blood parameters, antioxidant capacity and reproductive performance of ewes as well as on colostrum composition and subsequently improved growth performance of produced lambs.

LIST OF TABLES

Appendix of ANOVA Tables

LIST OF FIGURE

LIST OF ABBREVIATIONS

ADMY	Average daily milk yield
AETG	The Agriculture Engineering Technology Guide
AL	Albumin
ALT	Alanine aminotransferase
APRI	Animal Production Research Institute
AST	Aspartate aminotransferase
AT	Air temperatures
BB	Bee bread
BH	Berssem hay
BP	Bee pollen
BS	Black seed
BW	Body weight
CF	Crude fiber
CFM	Concentrate feed mixture
CP	Crude protein
$db\ ^{o}F$	Dry bulb temperature in Fahrenheit
DCP	Digestible crude protein
DM	Dry matter
EE	Ether extract
FB	Fresh berssem

GL	Globulin
GSH	Glutathione
Hb	Hemoglobin
IgA	Immunoglobulin A
IgG	Immunoglobulin G
IgM	Immunoglobulin M
IU	International unit
LBW	Live body weight
MCH	mean corpuscular hemoglobin
MCHC	mean corpuscular hemoglobin concentration
MCV	mean cell volume
MDA	Malonaldialdehyde
MS	Mean Square
NFE	Nonfat extract
NRC	National Research Council
NS	Not significant
OM	Organic matter
P4	Progesterone
PCV	Packed cell volume
PP	post-partum
PS	Polysaccharides

RBCs,	Red blood cells
RH	Relative humidity
S.O.V.	Source of variance
SNF	Solids not fat
SRBCs	Sheep red blood cells
TDN	Total digestible nutrition
THI	the temperature-humidity index
TS	Total solids
UN	Urea nitrogen
WBCs	White blood cells