COMPARISON OF METHODS FOR PROCESSING FIELD CROP RESIDUES TO IMPROVE THEIR QUALITY IN RUMINANT NUTRITION

By

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B. Sc. Agric. Sc. (Animal Production), Ain Shams University, 2010

A thesis submitted in partial fulfillment
Of

The requirements for the degree of

MASTER of SCIENCE
in

Agricultural Sciences
(Animal Nutrition)

Department of Animal Production
Faculty of Agriculture
Ain Shams University

2016

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ABSTRACT

Safaa Abdallah Abd El Monem Mohamed , Comparison Of Methods For Processing Field Crop Residues To Improve Their Quality In Ruminant Nutrition , Unpublished Master Disseratation , Ain Shams University , Faculty Of Agric , Department of Animal Production, 2016.

This experiment split into laboratory experiment and field experiment, laboratory experiment contain two different chemical treatment with different levels and probiotic treatment and mix of chemical and probiotic treatment.

Second part was field experiment, five digestibility trials were experimented the effect of using ration containing some of poor quality roughage with chemical (2% Na OH) treatment and chemical biological treatment (Urea 3% + probiotic 20 ml / litter), by using five different groups of Barkii sheep.

The first experiment (laboratory experiment):

Three types of roughage (rice straw, wheat straw and corn stalk) treated with fourteen different treatment (T1=sodium hydroxide1% , T2= sodium hydroxide 2%, T3= sodium hydroxide 3 %,T4=Urea 3%, T5= urea 4%, T6= ZAD 20ml/litter, T7=sodium hydroxide1 %+ urea 3%, T8= sodium hydroxide1 %+ urea4%, T9= sodium hydroxide2 %+ urea 3% , T10= sodium hydroxide2 %+ urea4%, T11= sodium hydroxide3 %+ urea 3%, T12= sodium hydroxide 3%+ urea4%, T13=urea 3%+ ZAD20ml/litter, T14= urea 4%+ ZAD20ml/litter) ensiling for (0,15,17,19and 21 days) to evaluate the most effective treatment and the most effective ensilage time.

After the prepare samples and treatment with the previous treatment and ensiled the samples for different time, we evaluated the improve on nutritive value and the decreased of crude fiber by proximate analysis

after that ***IVDMD&IVOMD*** for evaluate the most effective treatment to applicable on the field.

The Second experiment:

Fifteen growing Barkii male sheep of 7-8 months old and weighing on average 42.6 kg BW were used in 90 days feeding trial. Animals were divided in to five treatments to study the effect of sodium hydroxide or urea and ZAD on animal performance.

The experimental rations were as follow:

Control ration (T1): consisted of concentrate feed mixture (CFM) plus alfalfa hay.

1st tested ration (T2): consisted of a CFM (50%) plus (25%) alfalfa hay and (25%) corn ststalk treated with3% urea + ZAD 20ml/L .

2nd tested ration (T3): consisted of a CFM (50%) plus (25%) alfalfa hay and (25%) rice straw 3% urea + ZAD 20ml/L.

3rd tested ration (T4): consisted of a CFM (50%) plus (25%) alfalfa hay and (25%) rice straw treated with Na OH 2%.

4th tested ration (T5): consisted of a CFM (50%) plus (25%) alfalfa hay and (25%) wheat straw treated with Na OH 2%.

Digestibility trials were carried out to evaluate the nutritive value of these experimental diets with sheep.

Results showed that daily intake of dry matter, organic matter and feed components were insignificantly affected by the dietary treated of sodium hydroxide or supplementing 3% urea and ZAD (20ml /L) to corn stalk or rice straw improved ($P< 0.05$) OM, CF, EE and NFE digestibility and nutritive value (TDN and DCP).

Mean of TVFA's were significantly lower ($P< 0.05$) in all treatments than these of the control rice straw (T1) at 4 & 24 hrs.

Blood constituent's data showed that total protein globulin, and ALT concentration in all treatments increased at 4hrs after that, decreased significantly ($P< 0.05$) by T2, T3, T4 and T5. On the contrary, albumin concentration of all treatments increased at 4 hrs. Post feeding significantly ($P<0.05$) as compared with control (T1).

Data showed that average of daily gain was 200.3, 209.8 and 234.3 gm / head / day for T1, T3 and T4; recepctively

Generally, adding sodium hydroxide or urea and ZAD with poor quality roughage in diets for growing sheep is recommended to improve animal performance, however 3% urea and ZAD (20 ml) on rice straw resulted in a better performance.

Key words: Barkii sheep, sodium hydroxide, urea, ZAD. Digestibility, fermentation, blood constituents, body gain

ACKNOWLEDGMENT

First and foremost, all praise to Allah; the Magnificent, the merciful, without whose bless and guidance this work would never have been started nor completed.

The author would like to express his sincere grateful and appreciation to the supervisor of the present work, Dr. Fouad Abd El-.Aziz Salem Professor of Animal Nutrition, Animal Production Department, Faculty of Agriculture, Ain Shams University, for proposing the point of research, for his kind care during the progress and finishing of this work.

My sincere thanks to Dr. Soliman Mohamad Soliman Abdelmawla, Professor Emeritus of Animal Nutrition, Animal Production Department, Faculty of Agriculture, Ain Shams University, for his supervision and great help in the practical work and provision of facilities.

Deepest thanks are also extended to Dr. Mahmoud Khorshed, Professor of Animal Nutrition, Animal Production Department, Faculty of Agriculture, Ain Shams University, for his valuable guidance.

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