Abstract

This study was carried out to evaluate chemical composition and nutritional value of sorghum forage silage in response to enzyme rovabio and urea by gas production (*in vitro*) and nylon bags (*in situ*) methods. For this aim, sorghum forage were harvested and chopped with cutting length about 2 to 4 cm stage of milk in khordad mounth. The chopped forage then were mixed with the multi-enzyme at three levels (0, 3 or 6 grams per Kg of dry matter (DM)) and urea, at three levels (0, 5 or 10 percent per Kg of (DM) combination enzyme- urea and ensiled in 5 Kg plastic baskets. The silages were opened after 45 day and chemical compositions including dry matter (DM), organic matter (OM), Ash, ether extract (EE), crude protein (CP), cell wall and cell wall without hemicelluloses fractions were measured according to the standard procedure. Dry matter degradability and metabolizable energy content were also determined by gas production (*in vitro*) and nylon bags (*in situ*) methods. The results showed that the addition of the enzymes caused a significant difference in DM, EE, CP, ADF and NDF content and had no significant effect on OM, ASH and pH ($P<0.05$). Addition of urea caused a significant difference in NDF and ADF content of leaves and there was no significant effect on the chemical composition of DM, CP, EE and pH ($P<0.05$). Supplementation of enzyme and urea caused a significant difference in DM, EE, CP, NDF and ADF content and there was no significant effect on the chemical composition ($P<0.05$). The *in situ* degradability results indicated an increase of DM degradability (from 42.63 % to 60.05 %) and with increasing incubation time degradation increased. In addition, the results of gas production showed at all incubation times increased the amount of gas produced from urea, except in time 72, and supplements enzyme leaves and combination enzyme- urea only in the early hours increases the amount of gas production. In conclution, considering the changes in cell wall contents, hemicelluloses contents and degradability values in the present study, it can be suggested that the enzyme at level of 3 g/Kg along with 10 percent of the urea per Kg of DM can be used to make good sorghum hay silage.

Key words: Enzyme, Urea, Dry matter digestibility, Gas production, Forage sorghum.

University of zabol
Graduate school
Faculty of Agriculture
Department of Animal Science

The Thesis Submitted for the Degree M.Sc.
In the Field of Animal Nutrition

Title:

The effect of different levels of multienzymes and urea on nutritive value of sorghum forage silage

Supervisor:
Dr. Gh. Jalilvand

Advisors:
Dr. K. Shojaeian
Dr. M. Yousef Elahi

By:
M. Morteza Taghavi

January 2014