Survey on the ensiling of the rumen contents and wheat straw with molasses

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ABSTRACT: In this study ensiling the rumen contents and wheat straw was performed with four levels of molasses (0-5-10 and 15 percent of DM) and three levels of durability period (30–60 and 90 days). Samples were analyzed to evaluate dry matter, crude protein, pH and ammonia nitrogen (N-NH₃). Also, the most desirable method of ensiling was introduced on the basis of ammonia nitrogen contents and visual evaluation. Factorial experiment was used in a complete randomized design with four repetitions to analyze the data. The results showed that there was a significant difference between the dry matter of first treatment and the others (p>0.05). Also, a significant difference between crude protein of all treatments and the fourth one (p>0.05), showed the highest levels of crude protein in the last treatment. The more the molasses levels increased, the more pH decreased with a significant difference (p>0.05). There was a significant difference between the ammonia nitrogen levels in all treatments (p>0.05).

Keywords: Ammonia nitrogen; Ensile; Molasses; Rumen contents.

INTRODUCTION

As feedstuffs, especially roughages are fermented in the rumen relatively slow, there will be many unfermented and semi-fermented feedstuffs in the rumen after slaughter, which may have nutritive value. The nutritive value is the result of numerous bacteria and protozoa as well the feedstuffs in the rumen. Weight of rumen contents can be changed due to age, season, animal spices etc. (Patra and Ghosh, 1991; Weiss et al., 1994; Weinberg et al., 2003). According to the data gathered from slaughterhouses in Iran, the amounts of rumen contents taken from cows and sheep are respectively, 28 (14-40) and 4.5 (2–7) kilograms. Thus, ensiling the rumen contents is one of the simplest methods to use them (Ghosh and Amiteva, 1993; Mc Donald et al., 2002; Stuchbury and Scaife 1991).

To ensile the feedstuffs, it is necessary that they have 30–35 percents of dry matter and 6–8 percents carbohydrate, based on dry matter (Yassin, et al., 1991). If the dry matter of a feedstuff (to ensile) is lower than above, other feedstuffs (e.g. wheat straw, cereals or hays) can be added to increase the dry matter. Also, enriching carbohydrate sources could be done by adding molasses or cereals. Although there are several methods to evaluate silages, the practical ways are visual and analytical methods. Visual evaluation can be carried out through odor, color and tissue of silages and analytical evaluation can be determined by measuring ammonia nitrogen and pH of samples (Johnson et al., 1982).

MATERIALS AND METHODS

Based on previous studies, wheat straw and molasses was added to increase dry matter and carbohydrate sources of rumen contents (Colombari, 2001; Weinberg et al., 2003; Visser et al., 1998). The amount of wheat straw and molasses were calculated based on the dry matter (Table 1) and added to the rumen contents.
The experimental design was a complete random with a two factorial arrangement of treatments in three periods (30, 60 and 90 days) (Bodine et al., 1983). The experimental treatments were described in table 2. Mixtures were maintained in barrels and samplings were performed on mentioned periods. Samples were analyzed chemically in Animal Research Centre Laboratory to determine ammonia nitrogen, pH, dry matter, crude protein and visual evaluation (NRC, 2002).

### RESULTS

Based on SAS analysis, the results are shown in table3.

### DISCUSSION

Dry matter

Dry matter of treatments were significantly differed regarding to various levels of molasses, but there was no significant difference among dry matters in various periods (p>0.05). The results showed that wheat straw could increase dry matter of treatments (Figures1, 2).
Crude protein

The results showed that CP was increased parallel to the increasing of molasses, probably due to the crude protein of molasses (Figure3). There was no significant difference between treatments in various periods (p<0.05) (Figure4).
Previous studies showed that the pH of ensiled feedstuffs is 4–4.5 (McDonald et al., 2002). In this study pH of treatments was decreased as level of molasses was increased (Figures 5, 6).
Ammonia nitrogen

It was shown that in desirable silages, levels of ammonia nitrogen are low (Colombari, 2001). The results of this survey showed a decrease in ammonia nitrogen as molasses increased (p>0.05) (Figure 7), but there is no significant difference between various periods (p<0.05) (Figure 8).

Visual evaluation

Based on the average scores of visual evaluations, there was significant difference between treatments (p>0.05) (Figure 9). The silage quality promotes as levels of molasses increased that confirms the results of ammonia nitrogen evaluation (Figure 10).
REFERENCES


