

Abstract

The present investigation was carried out to study the effect of urea on chemical composition changes and improving of barley silage digestion by using a completely randomized design. Barley forage at the time of growing was harvested and cut them to 2-4 cm pieces and mixed with four levels of urea (0, 2, 4 and 6 percent on DM basis) and then ensiled inside of plastic bins (baskets). Chemical composition measured was dry matter (DM), organic matter (OM), crude protein (CP), ash, soluble carbohydrate (WSC), cell wall (NDF), cell wall without hemicellulose (ADF) and (pH), then results were analyzed, with SAS software. DM and OM digestibility and metabolizable energy of four treatments in compared to the control group was evaluated by *in vitro*, *in situ* and gas production experiments. The adding of urea significantly increased pH (4.27 to 8.40) and significantly decreased NDF (55.51 to 49.6%), ADF (31.30 to 28.60%), and DM (51.92 to 55.49%). Also results showed that dry matter digestibility in gas production was increased (51.92 to 55.49%) and degradation of dry matter by *in situ* experiment was increased (37.39 to 43.80%) ($p < 0.05$). The results obtained from degradability of dry matter showed that fraction a, b and c (rate constant degradable) were increased. Also, *in vitro* gas production parameters (b and c), OMD and ME values of experimental sample were increased. Results from this study indicate that treatment of barley silage with urea is capable of improving NDF, ADF and digestibility of barley silage then 4 percent of urea is recommended.

Key words: Urea, Barley Silage, Silage, Degradability, Nutrient value



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