

Abstract

This study was carried out to evaluate changes in chemical composition and nutritional value of grape leaves and twigs silage in response to urea and fibrolytic enzymes. For this aim leaves and twigs were harvested and chopped with cutting length about 2 to 4 cm. The chopped common leaves and twigs then were mixed with the urea (5%), fibrolytic enzyme (3g/kg DM) and ensiled in 5 Kg plastic baskets. The silages were opened after 45 days 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 (AOAC). Organic matter digestibility, digestibility organic matter in dry matter and metabolizable energy content and dry matter degradability were also determined by gas production (*in vitro*) and nylon bags (*in situ*) methods. Results showed that the addition of urea caused a significant reduction DM, ADF, NDF, EE content and increased CP and pH content ($p < 0.05$). Addition of Xylanase enzyme caused a significant decrease ADF, NDF and OM content but Cellulase enzyme only caused a significant decrease NDF and OM content and both enzymes caused a significant increase in ASH and CP content. In total addition separate of urea and fibrolytic enzymes and compound three additives improved all leaves and twigs grape chemical composition ($p < 0.05$). Digestibility results showed that urea and Xylanase enzyme caused a significant increase in dry matter digestibility, but Cellulase enzyme only at 6, 48 and 96 hours increased the rate of digestion. Gas production results showed that urea reduced the volume of gas produced and Xylanase increased gas production. Cellulase enzyme only at 2, 4 and 6 h incubation increased the amount of gas produced. In conclusion according to the obtained results we can conclude that use of fibrolytic enzymes to improve the chemical degradation and gas production in leaves and twigs grape is recommended and due to the high protein of leaves and twigs grape and effect of urea on amount of gas production then less urea is recommended.

Key words: leaves and twigs grape, Chemical composition, Gas production, Degradability



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**Study of chemical composition and digestibility of
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fibrolytic enzymes**

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