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Determination of nutritive value of cactus (*Opuntia ficus indica*) in animal nutrition

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Abstract

Due to the recent droughts and weakening of pastures, the cactus forage have recently been used to feed livestock. According to the lack of information on the nutritional value of cultivated cactuses, this study was conducted to determine the nutritional value of cactus (*Opuntia ficus indica*) in livestock feed. In this experiment a completely randomized design was used with three treatments (cactus age) and three replications. The DM, CP, EE, Ash, NDF, ADF, ADL, GE, Ca, P, K, Mg, Fe, Mn, Cu, Zn, total tannin, total phenolic compounds and gas production of treatments were determined. The contents of OM, Ash, NDF, ADF, and GE in one-year old (73.73, 26.27, 9.91, 5.19 % and 2735.9 cal/g, respectively), two-years old (72.21, 27.79, 14.97, 8.27 % and 2586.4 cal/g, respectively) and three-years old cactuses (68.45, 31.55, 16.40, 10.84 % and 2192.5 cal/g, respectively) were significantly different ($P<0.05$). The contents of Fe and GE of one-year old cactus (2454 mg/kg and 2735.9 cal/g, respectively) in comparison with two-years old (1494 mg/kg and 2586.4 cal/g, respectively) and three-years old cactuses (1399 mg/kg and 2192.5 cal/g, respectively) were increased significantly ($P<0.05$). The contents of Ca and Mg of three-years old cactus (6.39 and 2.95 %, respectively) in comparison with one-year old (2.09 and 3.03%, respectively) and two-years old cactuses (3.58 and 2.25%, respectively) were increased significantly ($P<0.05$). The contents of K and Mn in one-year old (3.27 and 30.7 mg/kg, respectively), two-years old (2.05 and 20.4 mg/kg, respectively) and three-years old cactuses (0.64 and 15.5 mg/kg, respectively) were significantly different ($P<0.05$). The highest content of estimated metabolizable energy and digestibility of organic matter were observed in the one-year old cactus (9.53 Mj/kg and 64.91%, respectively) and the lowest, were in the three-years old cactus (6.82 Mj/kg and 47.49%, respectively), so that there were significant differences between the ages of the cactus for both metabolizable energy and organic matter digestibility ($P < 0.05$). In general, the results showed that cactus can be considered only as a part of the diet during droughts and should be

noted that with the increase of cactus age, its nutritional value decreases significantly, therefore, the younger cactus is more suitable for animal feeding.

Keywords: Nutritive value- Pear cactus- *Opuntia ficus indica*- Gas test.