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Faculty of Agriculture

The Thesis Submitted for the Degree of Master of Science

(In the Field of Animal Nutrition)

The effect of heat treatment on gas production and degradability parameteres delgan variety of rapeseed

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Abstract:

The supply of animal feed is one of the major problems of livestock production, so that our country has a problem of lack of regular supply of ruminant feed throughout the year. Therefore, better use of resources as well as diversity in the supply of livestock food seems necessary. Rapeseed seed contains 40-45% oil and 17-26% protein, and due to the balance of amino acids, it has a high nutritional quality that can be used in ruminant diets, especially for fattening. The present experiment was carried out in order to thermally process rapeseed and its effect on parameters of gas production and digestibility in the rumen. The tested treatments are: milled canola seed as a control, milled canola seed placed in three temperatures of 60, 70 and 75 degrees and three times of 6, 12 and 20 hours. In this research, the chemical analysis of rapeseed (measurement of crude fat, measurement of crude protein and measurement of ash) and its degradability was carried out using the fistula method in cattle and also to evaluate the parameters of production. Gas was also used according to the method of Menk and Stingas (1988). The parameters of gas production were determined using the NLIN procedure of the SAS program (2004) and the degradability parameters were determined using the New way software. . The results showed that there was no significant difference between different treatments in raw ash, digestibility of organic matter, organic matter, metabolic energy, digestibility of organic matter in dry matter, soluble fiber in neutral detergent ($p \geq 0.05$), on the other hand Increasing the time and temperature has increased the amount of ADF among the studied samples, which can be attributed to the separation of some of the shell during the grain processing. Increasing the temperature from 60 to 70 degrees has reduced the amount of crude fat in the samples, and in both studied temperatures, after 24 hours, the amount of crude fat decreased among the investigated treatments. Meanwhile, increasing the temperature increased the amount of crude protein in the samples, but statistically, increasing the time at 70 degrees decreased the amount of crude protein. According to the results, the increase in temperature and time caused an increase in the amount of dry matter in the samples, and in both the studied temperatures, after 24 hours, the amount of dry matter increased significantly among the treatments. According to the results of the studied treatment, there was no difference in terms of ruminal degradability. The results of the chemical analysis among the studied bulls showed no significant difference between the different treatments. Although it was observed, in hours 4 and 8, the highest amount of chemical decomposition was related to the temperature treatment of 70 degrees and time of 24 hours, and the lowest amount of gas was related to the treatment of temperature of 60 degrees and time of 24 hours. Therefore, it can be said that heated rapeseed does not have much effect on the process of chemical decomposition of rapeseed and digestibility, and requires further investigation at higher temperatures and more time to process this seed.

Key word: gas productions, Oil seeds, rapeseed, treatment, Rumen degradation