EVALUATION OF THE ADDITION OF POMEGRANATE PEEL IN THE RATION WITH OR WITHOUT POLYETHYLENE GLYCOL ON LACTATING GOATS PERFORMANCE

By

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B.Sc. in Agric., Science (Animal Production), Faculty of Agriculture, Fayoum University., 2010
M.Sc. in Agric., Science (Animal Nutrition), Faculty of Agriculture, Fayoum University., 2015

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ABSTRACT

The present study was carried out at the Experimental Farm and Laboratories of Animal Production Department Faculty of Agriculture - Fayoum University, Egypt. *In vitro* trial was carried out at the Laboratories of Dairy Department, National Research Centre (NRC), Dokki, Giza, Egypt.

The objective of this study was to evaluate the addition of pomegranate peel (PP), detanninated pomegranate peel (DPP) and pomegranate peel treated with polyethylene (PEG) on *in vitro* digestibilities, gas production glycol characteristics, and lactating goat's performance. In *in-vitro* trial, the treatments were control which has a total mixed ration consisted of concentrates feed mixture (CFM), Egyptian clover, and wheat straw at a ratio 2,1and 1, respectively. Meanwhile ration one (R1) to R5 have the control ration in addition to 1,2,3,4 and 5 % PP, respectively, R6 to R10 have the control ration in addition to 1,2,3,4 and 5 % DPP, respectively, finally R11 to R15 have the control ration in addition to 1,2,3,4 and 5 % PP, respectively with 20 g PEG.

In farm trials, Sixteen lactating Zaraibi goats of about 3-4 years old (in their 2^{nd} to 4^{th} of lactation seasons with an average body weight of about 25 + 0.5 kg were used in the present study. After 14 days of parturition was randomly assigned into four groups, four animals per each tested ration (R) for 90days, **R_1: Control :** 50% CFM + 25% Egyptian clover and 25% wheat straw, **R_2:** Control ration+1% PP, **R_3:** Control ration+1% PP + 20 g (PEG) and **R_4:**Control ration+1% DPP.

The results revealed that the highest values of *In vitro* 1% DPP ،dry matter digestibility were recorded that 1% PP and 1% PP + 20 g PEG.

The results of in vivo revealed that the PP contained 90.85% DM, 4.84% CP, 15.53% CF, 87.21%OM, 4.69% EE, 62.15% NFE and 15.28% tannins. No significant differences were found between the tested rations regarding nutrients digestibility except EE digestibility. Nutritive values of R_2 and R_3 were slightly higher than R_4 and R_1, respectively. Ration three (R_3) was the best ration for daily milk yield and total milk yield, where R_4 showed the worst one. Also, there are no significant differences for dry matter, SV and TDN intake. While, values of DCP intake were higher significantly ($P<0.05$), for R_3 and R_2 followed by R_4 then R_1. Regarding feed conversion, R_4 was superior to other tested rations followed by R_1 then R_3 followed by R_2. All blood serum parameters were in the normal rang which support that the healthy effect of tested additives in goats rations. It seems R_3 could be used successfully for lactating goats, that R_2 and compared with control one from but R_3 is very expensive economical point of view, where R_3 was negatively effect, and not recommended.

Key words: Pomegranate peel, polyethylene glycol, Lactating Zaraibi goats, Feed intake, nutrients digestibility, milk yield and feed conversion.