

Effect of incorporation of fermented *Prosopis* pods in rabbit diets—on feed intake, feed conversion ratio, weight gain and growth rate

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Abstract

Rabbit feed for commercial use is primarily made up of cereals that are also used for human food. Often, there is a scarcity of quality cereals available for livestock feed production this makes feed expensive and rabbit production not sustainable. It is proposed that incorporating *Prosopis juliflora* pods meal, a locally available substitute for cereals, in rabbit feed production will reduce the cost of feed and make rabbit production sustainable. This will improve food and nutritional security and contribute to economic development. This study examined the effects of incorporating *Prosopis* pods fermented with *Aspergillus Niger* in the grower rabbit diet on performance. Mature pods were collected from Marigat, Baringo County, ground using a hammer mill with a sieve size of 5mm. The pods were fermented with *Aspergillus Niger* (FGMPP) for 24, 48, and 72 hours. After running a series of fermentations at different durations, 72 hours duration of fermenting the *Prosopis* pods was the best in reducing the anti-nutritive factors (condensed tannin, Pectin, and Phytate). A feeding trial using FGMPP-based diet was conducted at Tatton Agriculture Park using 60 New Zealand White grower rabbits (30 bucks and 30 does), 42 days old. Four dietary treatments containing 0, 20, 40, and 60% FGMPP were formulated. The effect of incorporating FGMPP in the diets on feed intake, feed conversion ratio, weight gain, and growth rate was determined. In a randomised complete block design (RCBD), forty-eight rabbits (48) were used. The feed intake, conversion ratio, weight gain, and growth rate data were analysed using the GLM (General Linear Model) procedure of the Statistical Analysis System (SAS) 2009 software. The initial weight was a covariate. Overall data were analysed using a one-way ANOVA test. Mean separation was done using Tukey's HSD test at $p < 0.05$ significance level. From the result of the study, the diet with the 60% FGMPP had the highest Average daily feed intake (ADFI), while there was no significant difference between 40 and 20%, while the diet with 0% had the lowest. There was an improvement in ADG with the diet with 60% FGMPP. The results on weight gain showed that the diet with 60% FGMPP had the highest, while the lowest was recorded in the one with 0%. For the Feed conversion ratio, the diet containing 60% FGMPP had the lowest, there was no significant difference between the diet with 40 and 20%, while the diet with 0% had the highest. There was no significant difference in the growth rate between the diet with 60 and 40% FGMPP, while the one with 60% differed from the 0% diet. The growth rate did not differ in the rabbits fed the diets containing 0 and 20% FGMPP. It was therefore concluded that including 60% FGMPP in the grower rabbit diet improved performance. The pods should be harvested, fermented and incorporated at 60% in rabbit diet to improve performance. This will also conserve the grazing lands, create employment and enhance the economic contribution of the *Prosopis* trees in the ASALs.

Keywords: Nutrients, performance, *Prosopis juliflora*, utilisation