EFFECT OF DIETARY PEASHRUB ON RABBIT PERFORMANCE AND CARCASS TRAITS

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ABSTRACT

In present peashrub feeding experiment, 60 hybrid rabbits at the age of 45-48d with an average body weight of 1050 g were divided into 4 groups. In the diet of the control group, ratio of millet grass was 33.4%. In groups I, II and III, 10%, 20% and 33.4% peashrub meal was supplied to substitute correspondent ratios of millet grass respectively. The results of this 48-day experiment showed that mean daily feed intake, daily gain and feed conversion rate for the group of the control and the groups I, II and III, were 89.8 g, 93.0 g, 90.8 g and 80.0 g; 22.6 g/d, 23.3 g/d 19.2 g/d and 17.9 g/d; and 3.98, 3.99, 4.72 and 4.74, respectively. The difference in daily feed intake, daily gain and feed conversion rates between groups were not significant. In addition, the results of slaughtering showed that carcass weight, dressing out percentage, slaughter yield and meat to bone ratio were not significant between groups of I, II and the control ($P > 0.05$). On the contrary, for the group III, all above-mentioned indexes were considerably lower than those of the control ($P<0.05$). Although future works are required with a greater number of observations, the results of the present experiment suggest that a supplement of 10%-20% peashrub in rabbit diets is feasible.

Key words: rabbit, feeding, peashrub, growth.

INTRODUCTION

Peashrub is the common name for all cultivates of *Caragana microphylla* Kom. It belongs to perennial deciduous shrub. It is drought/heat-resistant, wind/sand-hardiness and is psammophilous plant grown in fixed/ half-fixed sand. Peashrub is regarded as fine tree variety to sand shifting control and water/soil conservation (NIU X.W., 1988). It has been listed as one of the important tree varieties in current Conversion Project in northern China. How to make a comprehensive utilization of peashrub is a key approach to achieve sustainable development for the forest bio-system and local economy.

As far as cultivation of peashrub is mentioned, stump, cut off all the above ground branches during the period before winter comes to thawing season of coming year spring, is necessary to get new sheets and recover growth in the new year. That is why every year during the season there is plenty of peashrub branches in the forest area. But currently it is always been used as fuel-wood or green manure. It would be best if the branches could be used as feed for domestic herbivorous animals to improve nutrition level for local people and to collect manure for farming production. Up to now literature about peashrub's utilization as feedstuff in rabbit keeping is quite limited. The present study was conducted in order to investigate on the possible utilization of peashrub branches in growing rabbits.

MATERIAL AND METHODS

Animals

The experiment was carried out in the Experimental Rabbit Farm, Institute of animal Husbandry and Veterinary Science, Shanxi Academy of Agricultural Sciences.

For the purpose, 64 normal growth healthy Hybrid rabbits at similar age of 45-48 days were divided into 4 groups of 16 rabbits of the two sexes, each. The four groups were at random designed as groups I, II, III and control. The preliminary trial period lasted for one week and the experiment started at the end of the week when body weight for each group showed no remarkable difference.

Diets

In dietary groups I, II and III various levels of peashrub were used. Peashrub branches were collected during the stump at the end of March 2003 in Wuzhai country and almost all leaves were fallen and only bare sheet were left. The air-dried sheet were crushed into small pieces with hammer grinder and mixed into the diet. The chemical composition of the peashrub was: dry matter 93.5%, crude protein 9.3%, crude fiber 49.0%, crude fat 2.6%, N-free extracts 29.5%, crude ash 3.1%, Ca 0.93% and P 0.054% (REN K.L e*t al* 2002). The control-diet was made of millet grass. In addition,70-100g/d of chicory was supplied to each cage. The diet formula and its composition is detailed in Table 1.

Experimental procedure

The experiment lasted 48 days, from April 16, 2002 to June 3rd, 2002. The rabbits were kept in cages. In each cage, with an area of 0.25m^2, two rabbits were kept in *ad libitum*

feeding and drinking. At the end of the experiment 5 rabbits were chosen at random and were slaughtered after 12h of solid fasting.

All the results were tested with analysis of variance and multiple comparisons.

Table1. Nutrients and compositions of the diet (%)

Ingredients	Control	Group I	Group II	Group III
Corn	27.3	27.3	27.3	27.3
Wheat bran	21.3	21.3	21.3	21.3
Soybean meal	16.3	16.3	16.3	16.3
Millet grass	33.4	23.4	13.4	0
Peashrub	0	10	20	33.4
$CaHPO_4$	1.4	1.4	1.4	1.4
Salt	0.3	0.3	0.3	0.3
Trace elements	0.5	0.5	0.5	0.5

RESULTS AND DISCUSSION

Effects on rabbit performance

From Table 2 it is demonstrated that the mean daily feed intakes for the control and groups I, II and III were 89.8g, 93.0g, 90.8g and 80.0g, respectively. The daily feed intake of group III was 11.0% lower than that of the control one ($P<0.05$). The low feed intake of rabbits of group III might be resulted by the rather high level of peashrub supply.

Table 2. Effects of peashrub levels to growth of the rabbits(g, g/d).

Group	n	Initial weight (g)	Final weight (g)	Daily feed intake (g)	Daily weigh gain (g)	Feed/ gain
Control	15	1023±155	2107±181	89.8±2.49^b	22.6±4.69^a	3.89
Group I	14	1035±143	2154±267	93.0±2.20^b	23.3±4.60	3.99
Group II	14	1042±127	1966±264	90.8±5.96^b	19.2±4.92	4.72
Group III	11	1010±144	1869±345	80.0±11.8^a	17.9±6.01^b	4.74

Means in the same column with different superscript differ significantly.($p<0.05$)

Table 2 shows that the daily weight gain was 22.6 g, 23.3 g, 19.2 g and 17.9 g for control, I, II and III groups, respectively. The statistical analysis shows that there was no significant difference of the daily gain among groups I, II and control group ($P>0.05$);

Group III has the lowest daily gain which is 20.8% lower than that of the control (P<0.05). It might be resulted by the rather low intake of group III.

The feed conversion index was 3.98, 3.99, 4.72 and 4.74 for control, I, II and III groups, respectively and it shows no significant difference between groups of I, II, III with that of control groups(P>0.05).
All the above mentioned results indicate that when 10-20% peashrub meal is added in rabbit diet below the level of 10-20%, it does not produce negative effects.

Effects to carcass weight, dressing out percentage, meat percentage and meat to bone ratio

The dressing out percentage of rabbits of group II was the highest (Table 3). The meat percentage of rabbits belonging to the groups II and I was 9.7% and 5.16% higher than that of rabbits fed with the control diet. Also the meat to bone ratio did not differ among groups. All the above mentioned performance parameters were rather low on group III.

Table 3. Effects of peashrub meal on carcass traits (g, %) .

Group	n	Slaughtering weight (g)	Carcass weight (g)	Dressing percentage (%)	Meat percentage (%)	Meat/Bone ratio
Control	5	1998±138	1064±97	53.2	33.9	3.09
I	5	2065±147	1099±72	53.3	35.7	3.27
II	5	1938±156	1047±104	53.9	37.4	2.82
III	5	1814±165	889±64	49.1	30.4	2.33

CONCLUSIONS

The results suggests that the supply of 10-20% peashrub meal to diet for growing rabbits has no remarkable effects on growth performances, feed conversion ratio, carcass weight, dressing out percentage, meat incidence and on meat to bone ratio. Besides, diet costs of the diet with peashrub meal is relatively lower. When the peashrub meal level was 33.4% of the diet, it showed a considerable negative impact on feed intake (P<0.05) and on overall live performance and carcass traits. These preliminary results suggest to use the peashrub meal under the 20% of the diet.

Since every year during stump season in peashrub forest area there will be plenty and plenty of peashrub branches which could be crushed into meal and mixed into rabbit diet, peashrub branches could be utilized and developed as one of the most important rabbit feed sources. Further studies are needed to approach the rabbit meat quality fed with peashrub-supplemented diets.

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