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INITIAL STUDIES ON THE PRODUCTION AND USE OF MOLASSES BLOCKS IN THE FEEDING OF FORAGE FED RABBITS *

G. Filippi Balestra[1], A. Amici[1] and D. Machin[2]

[1]Unconventional Rabbit Breeding Centre,
Animal Husbandry Institute, Viterbo University, Italy.
[2]Animal Production Service, Animal Production and Health Division, F.A.O.,
Rome, Italy.

ABSTRACT

A new study has been carried out to investigate the technological characteristics of multinutritional blocks as a supplement for rabbits.

The results showed that block consumption was strictly linked with dimensions and shape of the block, no waste from the blocks was recorded.

Block consumption was also influenced by composition and consequent hardness.

The indications were that the palatability of the blocks reduced as they become harder, due to increased inclusion of cement.

INTRODUCTION

Tropical grasses are often the sole feed available for rabbit in Developing Countries, but as reported by Cheeke and Raharjo (1988) in a review on rabbit production they represent an unsuitable feed because of the low digestibility (Slade and Hintz, 1969) and unbalance in protein-energy rate. In order to provide rabbit with supplementary feeds some trials have been performed by Binh et al. (accepted for publication) to test multinutritional blocks. Though some interesting results have been obtained no information is given on the block preparation technology and consequent block waste when fed to rabbit.

Moreover no adequate technology has been developed to produce blocks destined to be effectively eaten directly by rabbits rather than licked as in the case of ruminants.

The supplementary blocks developed by many Authors (Sansoucy, 1986; Aarts et al., 1990; Preston and Leng, 1987) are strictly destined for use by ruminants where they are intended to be licked and provide urea which is unsuitable to supply protein for rabbits.

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Nevertheless the problem of integrating a roughage feed with an energy source is very important in rabbit as reported by many Authors (Lebas, 1983; Cheeke et al.; 1982) since many forage diets are energy deficient.

For this reason this study has been performed using harder blocks, not containing urea, with the aim at establishing the influence of the blocks physical characteristic on their consumption and effective use in rabbit feeding.

MATERIALS AND METHODS

Forty eight young New Zealand White rabbits were selected from a larger number to obtain an homogeneous sample which could be randomly assigned 16 groups each of 3 animals.

Because previous observations with young rabbits showed that they grew very irregularly when fed with alfalfa, animals weighting approximately g 1500 were selected for the trial.

All the animals received 50 g/day of a pelleted grower feed and pelleted dehydrated alfalfa meal ad libitum for an adaptation period of 2 weeks; four cages were kept as control and the other 12 were randomly assigned to the 4 treatments corresponding to the provision of different blocks (table 1).

The mean composition of feeds and blocks utilized during the trial is reported in table 2.

The animals were individually weighted twice weekly and the feed consumption of pellets and blocks consumed per cage were recorded daily. Weight of feed wasted was recorded daily.

A new block was provided weekly to insure that the rabbits always had access to blocks.

Resistance to compression (hardness) was tested using machinery normally utilized to measure the hardness of wood; Controls, unitester press, C 21 (Milano, Italy).

Analysis of variance was carried out on the results according to a factorial model including the treatment as fixed factor and the within treatment cage effect.

For daily feed consumption, the cage was treated as a bloc according to a factorial model including only the diet as fixed factor.

Differences between the means were tested with least significant difference.

RESULTS AND DISCUSSION

Rabbits ate the blocks on all the treatments but consumption decreased inversely to cement content and according to the blocks dimensions (Figure 1).

These results indicated that molasses blocks are highly palatable and the use of high levels of molasses can be used to increase the consumption of other unpalatable ingredients. Inversely block consumption could be decreased by increasing the content of cement.

Block shape is strictly linked with dimensions , this is because nibbling induce rounding of the block depressing consumption. As shown in Figure 1 the supplementary block was eaten more quickly when the shape was square i.e. during the first day the block was supplied (1st and 8th) the higher consumption was recorded.

It is particularly interesting to note that no wastes from the blocks were recorded even when the blocks were largely eaten and small.

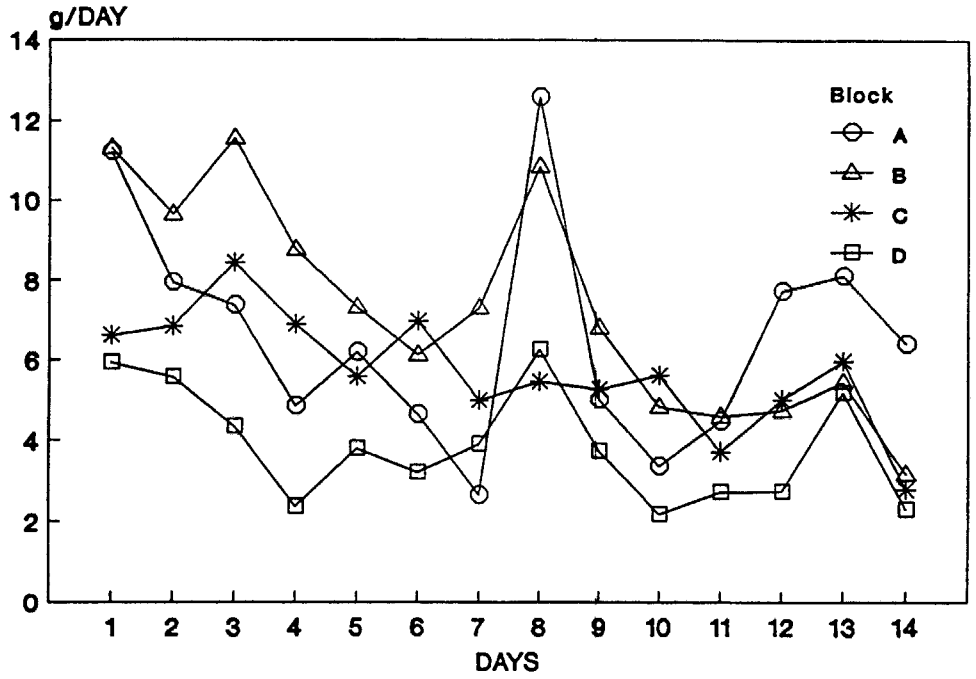

Figure -1- Trend of the mean daily consumption of the different blocks.

As shown in table 3 no statistical differences were detected in initial and final live body weight (LBW) of animals probably because the sensitivity of the experimental design was not sufficient to pick up small differences between the groups, even though there are indications that they might exist. For example group "D" shows lower mean live body weight than the control and other groups.

Daily live weight gain (DLWG) was significantly lower only in group "D", but no statistical differences were found between the groups "A" "B" "C" and control. This effect was probably due to the higher percentage of ash (due to high cement content) in block "D" causing a decrease in feed utilization and digestibility.

The overall conclusion of this study is that molasses blocks, with appropriate supplementals with possible limiting nutrients such as minerals phosphorous, and possibly protein, could be a valuable mean of supplementing forage diets for rabbits.

This initial study has indicated that blocks can be manufactured and fed to rabbits maintained on wire floors successfully.

Future studies should consider the specific provision of limiting nutrients to rabbits fed forage diets and establishes the nutritional value of such high levels of molasses for feeding to rabbits through the use of block technology.

Table 1 - Block formulation (%).

BLOCKS	A	B	C	D
molasses	50	50	46	36
bran	34	28	28	30
cement	16	22	28	34
resistance to breaking Kg/sqcm	53.3	56.4	71.4	120.1

Table 2 - Chemical composition of feeds and blocks % (on "as fed" basis).

FEEDS	dry matter	crude protein	crude fiber	ether extr.	nitrogen free extr.	ash	Ca	P
Dehydrated alfalfa meal pellet	88.20	13.90	26.00	2.50	35.50	10.30	1.50	0.22
ind. rabbit. pell.	87.00	17.00	16.00	2.60	41.90	9.50	0.75	0.35
BLOCKS								
A	89.00*	9.26	3.67	1.42	44.80	22.18	4.44	0.42
B	89.00*	8.35	3.02	1.17	41.76	27.54	6.02	0.35
C	89.00*	8.02	3.02	1.17	40.46	32.84	7.36	0.35
D	89.00*	7.51	3.24	1.26	35.68	35.93	9.23	0.37

* Blocks were dried 3 days at 30 °C.

Table 3 - Productive performances and block consumption.

Treatment	A	B	C	D	Control	s.e.
Initial LBW g	1757	1726	1752	1760	1765	51.2
Final LBW g	2192 a	2190 a	2175 ab	2098 b	2191 a	55.9
LWDG g	31.1 a	33.1 a	29.6 b	24.7 b	30.5	1.8
block/day g	7.86	7.41	5.73	3.83	0	0.4

Different letters on the same row indicate statistical significant differences; $P<0.05$.
LBW = live body weight; LWDG = weight daily gain.

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