

EFFECT OF ENERGY, PROTEIN AND SULPHUR CONTAINING ANIMO ACIDS ON WOOL
PRODUCTION OF ANGORA RABBITS

TOSENBERGER, J., Z. HENICS,
UNIVERSITY OF AGRICULTURE /KESZTHELY/
FACULTY OF ANIMAL SCIENCE OF KAPOSVÁR
7401. KAPOSVÁR
PB.: 16.
HUNGARY

INTRODUCTION

Wool-production of angora rabbits is determined by genetic and nutritional factors. Researchers have agreed in that the angora rabbits need some lower energy containing feed than the meat breeds. Protein and S-amino acid requirements of angora rabbits are 160-170 g and 7-9 g pro kg feed respectively. /Gippert, 1985./ Trials were carried out to examine the effect of different energy, protein and S-amino acid containing feeds on wool-production of angora rabbits.

METHODS

In the First experiment three groups of angora rabbits were ad libitum fed by compound feeds /Table 1./ which were different from each other in digestible energy, crude protein, crude fiber and S-amino acids.

In the Second experiment six different compound feeds were given to young rabbits divided to 2 x 6 groups. /Table 2./

Initial and finishing liveweight, feed intake, gain, wool-production and feed conversion ratio of rabbits were measured in both trials.

Table 1.

Main characteristics of compound feeds in the first experiment.

	Compound feeds		
	A	B	C
<u>Components %</u>			
Wheat	27.0	30.0	32.0
Oat	19.8	3.0	10.0
Horse-bean	3.7	-	-
Extr. soya meal /47 % c.p./	1.8	10.0	11.0
Wheat-bran	16.5	13.0	-
Alfafa meal /I.class/	25.4	35.0	35.0
Milkpowder	0.8	-	-
Corn	-	4.0	-
Straw meal	-	-	7.0
Minerals and vitamins ^x	5.0	5.0	5.0
<hr/>			
DL-methionine supplement g/kg	-	1.65	4.85
<hr/>			
DE ^o MJ/kg	11.14	10.98	10.64
Crude protein g/kg	161	182	177
Crude fiber g/kg	93	98	118
MET + CYS ⁺ g/kg	9.2	8.5	9.3
DE : /MET + CYS/ MJ/g	1.21	1.29	1.14

x each kg of mineral and vitamin mix contained Ca 170 g, P 72 g, NaCl 59 g, methionine 25 g, Zn 1.0 g, Cu 0.1 g, Mn 0.804 g, J 0.06 g, Co 0.141 g; Vitamine A 250.000 IE, D₃ 22016 IE, E 600 IE, K₃ 20 mg, thiamine 40.6 mg, riboflavin 80 mg, biotin 40.6 mg, Cobalamine 0.2 mg, Ca-pantotenate 300 mg, nicotin acid 600 mg, folic acid 10 g, cholin clorid 6000 g, BHT-antioxidant 120 mg.

^oDE = digestible energy;

⁺MET + CYS = methionine + cystine

Table 2.

Main Characteristics of compound feeds in the
second experiment

	Compound feeds					
	1.	2.	3.	4.	5.	6.
<u>Components %</u>						
Wheat	15	15	15	15	15	15
Oat	29	29	24	24	23	17
Alfalfa meal /I.class/	21	21	21	21	21	21
Ext.sunflower meal /40 % c.p./	18	18	23	23	18	24
Wheat bran	7	7	7	7	7	7
Straw meal	5	5	5	5	5	5
Fat	-	-	-	-	6	6
Minerals and vitamins ^x	5	5	5	5	5	5
<hr/>						
DL-methionin supplement g/kg	-	2.50	-	2.30	0.60	2.50
<hr/>						
DE MJ/kg	10.49	10.53	10.68	10.49	10.74	11.10
Crude protein g/kg	175	181	196	201	187	203
Crude fiber g/kg	104	124	131	133	125	126
MET + CYS g/kg	7.19	9.70	7.37	9.70	6.64	9.72
DE : /MET+CYS/ MJ/g	1.46	1.09	1.45	1.08	1.62	1.14

x the same composition as in the first experiment /see Table 1./

Table 3. Main data of the first experiment completed by the young wool-producing angora rabbits

	Compound feeds						SD ₅	%
	A		B		C			
	F	M	F	M	F	M		
Animals	5	13	7	5	8	6	-	-
Initial liveweight kg	1.89	1.56	1.73	1.54	1.70	1.48	NS	NS
Finishing lw,kg	3.10	2.78	2.74	2.76	2.88	2.75	NS	NS
Feed intake, g/d	141	140	138	139	160	148	-	-
Gain g/d	16.8	16.9	13.5	16.3	16.6	17.1	-	-
Wool, g	161.0	133.3	186.3	142.4	203.5	158.2	19.8	16.2
Feed: wool, g/g	71.4	87.4	61.2	30.5	65.0	77.7	-	-

F = female, M = male, NS = no significant

Table 4. Main data of the second experiment completed by wool-producing angora rabbits.

	Compound feeds						SD ₅	%
	1	2	3	4	5	6		
<u>Female</u>								
Animals	10	9	8	9	8	8	-	-
Initial lw,kg	1.61	1.61	1.57	1.62	1.63	1.61	NS	NS
Finishing lw,kg	2.88	2.80	2.88	2.75	2.65	2.89	NS	NS
Feed intake g/d	119	140	142	143	156	128	-	-
Gain g/d	16.3	15.3	16.8	14.5	13.1	16.4	NS	NS
Wool, g	179.2	184.6	207.5	186.4	173.3	193.1	NS	NS
Feed: wool, g/g	52.2	59.2	53.4	59.8	70.0	58.4	-	-
<u>Male</u>								
Animals	9	11	7	8	9	10	-	-
Initial lw,kg	1.52	1.55	1.56	1.50	1.50	1.55	NS	NS
Finishing lw,kg	2.75	2.79	2.81	2.64	2.57	2.86	NS	NS
Feed intake, g/d	125	136	137	118	133	147	-	-
Gain g/d	15.8	15.9	16.0	14.6	13.7	16.8	NS	NS
Wool, g	168.7	152.9	168.7	153.3	151.6	161.4	NS	NS
Feed: wool, g/g	57.7	69.8	63.4	60.0	68.7	57.0	-	-

Statistical analyses were accomplished by means of analyses of variance /Sváb, 1981./.

RESULTS

At the end of the 72 days experiment the live weight of the young rabbits has approached the liveweight of the adult animals. /Table 3./

The average daily feed intake was the most in the female young which was fed by the compound feed C. Daily gain of rabbits during the experiment period was similar in all groups except the females in group B. Significant differences were found among sexes in the wool-production.

The females produced more wool on the effect of three different quality feeds than the males did. At the same time the highest wool-production could be measured in the CF group.

Feed utilization was the most favorable in the B and C group of female rabbits indicating the effect of higher nutritive value of compound feeds.

The results of the second experiment are shown on Table 4. After the 78 day experiment significant differences were not found in measured parameters. Results of feed intake between the sexes showed that females consumed some more feed than the males. The wool-production of females was significantly more than that of males in each group. In this trial females obtained the most favorable wool-production when the compound feed contained 10.68 MJ of DE, 196 g/kg of protein and 7.4 g/kg of methionine + cystine. In this case the feed conversion ratio also was economical. The wool-production of male rabbits was the most when compound feed of animals contained 10.49 MJ of DE, 175 g/kg of protein and 7.2 g/kg of methionine + cystine.

The results of trials indicate that the females are able to produce more wool than male rabbits do. The more wool-production requires higher quality of feeds. The wool-production with males can be done by cheaper and lower nutritive value feeds.

ACKNOWLEDGEMENT

The authors are very grateful to Ministry of Agriculture and Food of Hungary for pecuniary assistance and to all coworkers of Central Laboratory of Faculty of Animal Science of Kaposvár for chemical analyses.

REFERENCES

Gippert, T., 1985. A nyúl takarmányozása. In: Holdas S. Nyúltenyésztők kézikönyve. Mezőgazdasági kiadó, Budapest

Sváb, J. 1981. Biometriai módszerek a kutatásban. Mezőgazdasági kiadó, Budapest.

EFFECT OF ENERGY, PROTEIN AND SULPHUR-CONTENT AMINO ACIDS
ON WOOL PRODUCTION OF ANGORA RABBITS.

J. Tossenberger. and Z. Henics.

University of Agriculture /Keszthely/
Faculty of Animal Science of Kaposvár
Institute of Physiology and Animal Nutrition

PB. 16. KAPOSVÁR
7401. HUNGARY

Trials were performed to investigate the wool production of Angora rabbits on feeding of three /number of animals in groups 20, 14 and 14 respectively/ and of six /6x 2 x 10 arrangement/ compounded feeds differed in energy, crude protein sulphur content amino acids. Values of wool production showed that female rabbits had achieved the best performance if their feeds contained normal level of energy /10,68 MJ DE/kg/, high concentration of crude protein /196 g/kg/ and usual quantity of MET+CIS /7,4 g/kg/. In the case of male animals the most effective wool-production was obtained when the concentration of feed of energy, crude protein and MET+CIS were 10,49 MJ DE/kg, 175 g/kg and 7,2 g/kg respectively.

EINFLUSS DER ENERGIE, DES EIWESSES UND DER SCHWEFELHALTIGEN
AMINOSAUREN AUF DIE WOLLPRODUKTION BEI ANGORA-KANINCHEN

Die Verfasser untersuchten den Einfluss des verschiedenen Energie, Roheweiss und Methionin /MET/ + Cystin /CIS/ - Gehaltes im Futtermittel auf die Wollproduktion bei Angora-Kaninchen. Im Versuch I wurden 3 Gruppen mit 20, 14 und 14 Tieren und im Versuch II ebenfalls 3 Gruppen mit 6 x 2 x 10 Tieren eingestallt. Die Höchstleistungen konnten bei den weiblichen Tieren durch die Verwendung der Futtermittel mit normalem Energie-Gehalt /10,68 MJ DE/kg/, mit hohem Roheweiss-Gehalt /196 g/kg/ und mit normalem MET + CIS-Gehalt /7,4 g/kg/ erreicht werden. Bei den männlichen Tieren zeigten sich die Höchstleistungen bei einem Energie- Gehalt von 10,49 MJ DE/kg, Roheweiss-Gehalt von 175 g/kg und MET + CIS-Gehalt von 7,2 g/kg.

