

THE EFFECT OF STARVATION ON THE CARCASS YIELD OF NEW ZEALAND WHITE RABBITS

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Introduction

The slaughter houses are concerned in increasing products of quantity and quality from the meat rabbit. The dressing percentage and meat quality are effected by a number of factors. Some of these (the effect of breed, body weight, age, nutrition, environment) are already granted on the purchase, they can only be influenced by performing a long-term breeding policy (the distribution of breeds with a high carcass yield), by the organization of raising (to provide the farmers with good feeds and expertise, to organize the collection of fryers etc.), and by stimulation (to pay extra for breeds producing a better dressing percent).

In addition to these factors, however, the time between collection and slaughtering, and the stress can also effect the carcass yield. Lebas(1975) compared the carcass yield of rabbits kept in the cage until slaughter, to that of rabbits being transported for 3 hours, or being starved for 18 hours, or, finally, being transported and starved for 18 hours. Compared to the first group, the carcass yield was 0.5, 1.5, and 3.1 % lower in the experimental groups. Gey (1980), Gey and Thormann (1978) also indicated, that treatment before slaughter has an effect on the dressing percent and the carcass quality.

In fact, meat rabbits are transported to the slaughter house from variable distances, the length of waiting time there before slaughtering also varies, and rabbits are exposed to a certain stress, too, which depends on the circumstances of collection and transport. The effect of starvation before slaughtering and the length of transportation on the weight loss and dressing percentage were examined in wintry weather conditions.

Materials and Methods

14-week-old New Zealand White rabbits (n=178) weaned at the age of 28 days were investigated. The rabbits were raised under similar conditions, in two-tier wire cages (3 rabbits per cage). They were fed ad libitum a commercial pellet and hay. Water was supplied by automatic drinkers. The 178 rabbits were divided in four groups each of which had a similar average weight. The groups were taken from the cages and placed in the housing cages (18 rabbits per cage) 24, 18, 12, and 6 hours before slaughtering. From this point on they were provided neither food, nor water (starvation time). Slaughter was carried out at a slaughter house about 200 km from the experimental farm (4 hours transportation time), and it took additional 2 hours from the arrival to the slaughtering (waiting time). The number of rabbits, waiting and transportation times and the total starvation time are shown in Table 1.

In experiment, the following data were collected:

- body weight of rabbits when taken out of the rabbitry (24, 18, 12 and 6 hours before slaughtering)
- body weight of before transportation (6 hours before slaughtering)
- body weight of when hung on the slaughter line
- fresh warm carcass weight (together with head, liver and kidneys) when hung up in the cold-storage line

From these data we calculated

- the loss due to starvation and transportation
- the dressing percentage (the carcass weight was compared to the body weight before starvation).

Data were statistically analysed using t-test.

Results and Discussion

The collected data are summarized in Table 2. The average body weight of the groups were similar before starvation. Three larger rabbits were eliminated from group D (24 hours) in the slaughter house, which eventually slightly decreased the average body weight in this group. In spite of this, we can conclude more weight loss in the groups starved for longer periods. At the beginning of starvation, the weight loss is larger than at the end. In the first 6 hours we recorded a loss of 98 grams, while in the

second and third 6 hours only 69 g and 50 g. It is probably because at the beginning of starvation a larger amount of feces and urine are excreted, than later, when the digestive tract and the bladder are already partly emptied, and it is mostly the water of the tissue that makes up for the weight loss. This theory is also supported by the figures of weight-loss during the transportation, which took place in the last 6 hours of starvation in all the groups. Rabbits taken immediately from the rabbitry (Group A), lost twice as much weight during the transportation as those in the group D.

The dressing percentage compared to the body weight before starvation in groups B, C and D decreased 0.77, 1.42, and 1.96 % resp., compared to the group starving for 6 hours. Although not all of the groups compared to the one before show significant difference - in spite of the clear trend -, a group starving for 12 hours longer than another one differed significantly in the carcass yield. The data clearly indicate, that starving animals will live up the reserves of their bodies after a certain time. Eventually, it does not make any difference, whether the contents of the intestines and the urine are excreted by the rabbit is the natural way, or they are removed together with the digestive tract at the slaughter house. The weight loss due to slaughtering would be the same, if no other factor (mobilization of the body reserves) contributed to it. Therefore, the difference between the dressing percentage of the groups can only be a result of certain metabolic processes, of which the decrease of the tissue-water contents must be dominant.

In our starvation experiment carried out earlier (Szendrő et al., 1988) we also noted that young rabbits starving (but consuming water) for 24 hours once a week, gain less weight than those given full feeding or those fed 9-12 hours a day. Hence, it seems that a 24-hour-long period of starvation will cause irreversible changes in the organism. Thus, we suggest, that meat quality (proportion of water, etc.) should also be examined in similar experiments.

Conclusions

On the basis of the results of our experiment and data of literature it is possible to say, that with longer starvation and transportation time the starvation loss increases, and the dressing percentage decreases.

The carcass weight compared to the body weight before starvation (dressing percentage) in the groups starving 6 and 24 hours were 55.79 % and 53.83 % resp. Considering the capacity of Hungarian slaughter houses this 1.96 % difference can mean several million Forints income per year, or, the same amount can be lost, too.

In fact, it occasionally takes a long time to transport rabbits from the rabbitry to the slaughter house. This factor cannot be completely disposed of, but by improving the organization, the losses due to organizing deficiencies and "business interests" can be decreased. If the meat rabbit is carried to the nearest slaughter house, the collection trailer arrives in time at the rabbitry, and it is arranged so that the waiting time in the slaughter house is as short as possible, etc. the starvation time can be reduced and thus the dressing percent can be higher.

References

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Table 1

Parameters of the experimental groups

Group	No. of rabbits	Starvation time at the rabbitry hours	Transportation time hours	Waiting time in the slaughter house hours	Total starvation time hours
A	46	0	4	2	6
B	44	6	4	2	12
C	44	12	4	2	18
D	41	18	4	2	24

Table 2

Dressing percentage of 14-week-old New Zealand White rabbits starved for different periods

Characters	G r o u p s							
	A		B		C		D	
	Starvation time, hours							
	6		12		18		24	
	\bar{x}	s	\bar{x}	s	\bar{x}	s	\bar{x}	s
bw before starvation; g	2680	243	2698	300	2693	302	2649	310
bw before transportation; g	2680	243	2601	282	2531	287	2498	303
bw when hung on the slaughter line; g	2583	231	2530	273	2476	291	2444	295
carcass weight; g	1498	179	1484	173	1466	185	1428	193
total weight loss (till slaughter); g	98	33	167	46	217	51	208	45
total weight loss (in proportion of the original bw); %	3.6		6.2		8.0		7.8	
weight loss during transportation; g	98	33	71	24	55	25	48	23
dressing percentage; %	55.79 ^c		55.02 ^b		54.37 ^{ab}		53.83 ^a	

Note: Groups marked with the same letter have no significant difference. The difference is significant at $P < 0.001$ level, between a and c, while between the others at $P < 0.01$ level.

bw = body weight

Summary

The effect of starvation on the carcass yield of New Zealand White rabbits

14 week-old NZW rabbits were slaughtered in 4 groups (41-46 per group) according to starvation time (6, 12, 18 and 24 hours). The weight loss before slaughtering averaged 98, 167, 217 and 208 g in the 4 groups resp., the dressing percentage 55.79, 55.02, 54.37 and 53.83 % ($P < 0.05$).