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**КЛАНИЧЕН СЪСТАВ И МЕСОДАЙНА ХАРАКТЕРИСТИКА ПРИ МЪЖКИ И ЖЕНСКИ ЗАЙЦИ  
CARCASS COMPOSITION AND MEAT CHARACTERISTIC OF MALE AND FEMALE RABBITS****Ацо Кузелов\*, Елена Атанасова  
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kuzelovaco@yahoo.co.uk****Резюме**

Извършено е проучване върху рандемана, кланичния състав и месодайната характеристика на 11 мъжки и 11 женски заека ( $F_1$  ♂ Калифорнийски x ♀ Новозеландски). В продължение на 77 дни зайците се отглеждаха при еднакви условия и бяха хранени с комбиниран фураж, съдържащ 18% суров протеин. За периода на угояването беше достигната средна предкланична жива маса от  $2462 \pm (0,15)$  g при мъжките и  $2472 \pm (0,17)$  g при женските. Средният рандеман на трупа с главата и без нея при мъжките зайци беше съответно  $55,76 \pm (0,22)\%$  и  $50,77 \pm (0,20)\%$ , а при женските -  $55,92 \pm (0,24)\%$  и  $51,52 \pm (0,19)\%$ .

Относителният дял на отделните части на трупа при женските зайци е, както следва: тазобедрена част – 30,67%, поясно-кръстна част – 29,04%, лопатъчно-раменна – 21,94%, и вратно-гръдна част – 18,35%. При мъжките зайци съотношението на тези части е тазобедрена част – 30,52%, поясно-кръстна част – 28,52%, лопатъчно-раменна – 21,88%, и вратно-гръдна част - 19,08%. Участието на мускулната тъкан в масата на трупа без главата е била  $76,45 \pm (2,18)\%$  при мъжките и  $75,70 \pm (2,17)\%$  при женските зайци.

**Abstract**

A study was carried out on the yield, carcass composition and characteristics of meat of 11 male and 11 female rabbits ( $F_1$  ♂ Californian x ♀ New Zealand). For 77 days the rabbits were kept under identical conditions and were fed with compound feed containing 18% crude protein. An average pre-slaughter live weight of the males of  $2,462 \pm (0,15)$  g and  $2,472 \pm (0,17)$  g of the females was achieved during the fattening period. The average participation of the clean carcass with and without the head compared to the live mass before slaughtering was  $55.76 \pm (0,22)\%$  and  $50.77 \pm (0,20)\%$  for the males, and  $55.92 \pm (0,24)\%$  and  $51.52 \pm (0,19)\%$  for the females.

Compared to the mass of the clean carcass with head on of the female rabbits the pelvic-thigh part participated with 30.67%, the flank part with 29.04%, the forelegs with 21.94% and the neck-breast part with 18.35%. The participation of the parts from male rabbits was as follows: the pelvic-thigh part 30.52%, the flank part 28.52%, the forelegs 21.88% and the neck-breast part 19.08%. The participation of the muscle tissue in the mass of the clean carcass without the head was  $76.45 \pm (2.18)\%$  for the males and  $75.70 \pm (2.17)\%$  for the females.

**Ключови думи:** зайци, кланичен състав, месодайна характеристика, живо тегло.**Key words:** rabbits, carcass composition, meat characteristic, live weight.**INTRODUCTION**

The previous years yielded increased attention for the production of meat containing fewer fats, i.e. meat poorer with cholesterol.

Under today's economic conditions the production of rabbit meat becomes more and more significant. Besides, due to rabbit's fertility and growth potential the breeding of

rabbits becomes more attractive for production of food reserves. The rabbits are very fertile and characterized with a quick and intensive growing, large biological value of the meat and a large conversion degree of the food. [Hammond & Marshall (1925), Hammed & Casida (1969), Hafiez (1970), Urosevic and ass. (1986), Urosevic and ass. (2000), Kapitan (2006)].

In foreign literature the examinations of the slaughterhouse values of rabbits, mainly from Californian breed, are numerous. Such examinations were conducted by Kovacevic and Raseta (1983), Grujic (1985), Trojan and Mach (1982), Mach and ass. (1983), Ciavoski and Ruminskaja (1982). Skandro et al. (2004); Panic and Petrovic (1989 b); their examination data show a variance of the yield of meat from 49.8% to 53.3%.

Because of the use of different cutting schemes it is very difficult to compare the results from the cutting of the cooled carcasses. That is why we shall show only the data given by Grujic (1985); who claims that the front part participates with 22-24%, the back with 34-38%, the thighs 32-36%, the heart and the liver 5-7%.

According to the data of Ciavoski and Ruminskaja (1982), who examined Californian breed rabbits with average carcass's mass of 3,200 g, the pelvic-thigh part contributed 30-34%, the flank part 20-22%, the forelegs 12-13.5% and the neck-breast part 21-24%. The same authors the head participated with 6.25% and the hide with 11.5%. According to the data of M. Panic and ass. (1986), who examined Californian breed rabbits with average body mass of 3,000 g, the pelvic-thigh part contributed 33.3%, the flank part 25.6%, the forelegs 15.5% and the neck-breast part 25.6%.

The aim of this study was to examine the carcass composition and meat characteristic of male and female cross-breedings between Californian and New Zealand rabbits.

#### MATERIAL AND METHODS

The research of the portion of the parts from rabbit's carcass was conducted on 22 slaughtered rabbits with mixed Californian and New Zealand breed. From which 11 males and 11 females animals. Rabbits are reared in farming conditions and kept in separate wired cages. The rabbits were fed *ad libitum* with granulated rabbit food - palettes that contain alfalfa hay, barley, corn, wheat, soya pods, sunflower pods, premix, salt, vitamins and minerals. This food contained 18% crude fiber, 15% protein 1% calcium and 2% fat. Twenty hours before slaughtering they were stopped to be fed. The slaughtering of the rabbits is done of 77 days age.

The slaughtering and primary processing was conducted in accordance to all veterinarian and sanitary conditions prescribed by the law. The slaughtering was done by cutting open the blood vessels.

After the skinning, each hide was weighed on an electronic scale to determine the percentage portion of the hide in the total body mass. Then the internal organs of each rabbit (heart, liver, lungs, and raw bowels) were weighed to determine their separate portion in the body mass. After weighing of the carcass with the head and

without the head, the carcass was cut in four parts: pelvic-thigh, flank part, forelegs and neck-breast part.

The pelvic-thigh part was extracted first by cutting in parallel of the spine by the cranial rim of the bowel bone's wings. Then the flank part was extracted by a cut going in parallel with the spine by the rim of the last rib.

The back with the ribs was extracted from the foreleg and the neck by a cut going parallel with the spine in the area of the sixth vertebrae cutting the ribs and the inter-rib muscles. Thus the following parts were obtained: thighs, kidneys with the stomach wall, back with the ribs, foreleg with the collar and the chest. The participation of certain tissues in the rabbit's carcass was determined by dissection and weighing of the muscle, fat and bone tissues.

All data were processed according to a variation statistical method (average value, standard deviation, variation coefficient) computed by the UNIVARIATE procedure of the statistical program SAS (SAS Institute, 1999).

#### RESULTS AND DISCUSSION

From gender aspect the female rabbits achieved larger live mass. The shown values of the yield for the female rabbits were 55.92% in average (with the head on) and 51.52% (without the head). The same values for the male rabbits were 55.76% (with the head on) and 50.77% (without the head).

The average mass of the heads of all slaughtered rabbits was 124 g. The males had a more massive and heavier heads than the females. The minimal mass of the male heads was 105 g, while of the female heads it was 100 g, and the maximal one was 140 g for the males and 132 g for the females. Difference between the genders was also observed in the average mass of the full intestines and the liver in favour of the females, while the average mass of the hearts was in favour of the males. But these differences are statistically insignificant (Table 1).

Regarding the internal organs the largest participation in the mass of the carcass showed the full intestines (17.05% the males and 18.01% the females). The smallest participation showed the lungs (0.48%) both the male and the female rabbits.

Regarding the main categories of meat the largest participation in the carcass showed the pelvic-thigh part while the smallest showed the neck-breast part (Table 2). The female rabbits achieved higher scores of mass in the pelvic-thigh part for 30 g and 26 g in the neck-breast part. We must point out that these differences are due to the higher live mass of the female rabbits (Table 2). These characteristics do not show a statistically significant difference between the genders –  $p > 0.05$ .

The obtained results are in accordance with the results of other authors (Ali, 2007; Ciavoski & Ruminskaja,

**Table 1.** Carcass composition of male and female rabbits

Indices	Males		Females	
	$\bar{x} \pm S_x$	Cv	$\bar{x} \pm S_x$	CV
Live weight (kg)	2,462±0,15	3,98	2,472±0,17	0,41
Head (kg)	0,130±0,008	8,30	0,118±0,007	9,32
Hide (kg)	0,432±0,005	5,67	0,435±0,004	5,69
Kidneys (kg)	0,035±0,004	1,10	0,035±0,004	1,10
Lungs (kg)	0,012±0,002	3,22	0,012±0,002	3,22
Liver (kg)	0,072±0,008	4,44	0,078±0,005	4,52
Heart (kg)	0,062±0,007	2,90	0,058±0,003	6,72
Full bowels (kg)	0,420±0,005	1,40	0,465±0,002	1,37
Carcass with head (kg)	1,373±0,12	0,42	1382±0,15	0,57
Carcass without head (kg)	1,250±0,14	8,0	1273±0,12	0,21

**Table 2.** Participation of the main categories of meat (%) in the composition of the rabbit carcass

Carcass ratio	Males		Females	
	$\bar{x} \pm S_x$ g	%	$\bar{x} \pm S_x$ g	%
Pelvic thigh part	420,5±0,018	30,52	450,5±0,020	30,67
Flank part	392,0±0,14	28,52	418,0±0,017	29,04
Forelegs	300,5±0,015	21,88	300,15±0,013	21,94
Neck breast part	260,0±0,012	19,08	213,35±0,010	18,35

**Table 3.** The average share (%) of primary tissues examined in rabbits

Basic tissues	Males $\bar{x} \pm S_x$	Females $\bar{x} \pm S_x$
Muscle tissue	76,45±2,18 %	75,70±2,17 %
Fat tissue	2,32±0,80%	2,50±0,83 %
Bone tissue	19,28±0,52%	19,70±0,58 %
Connective tissue	1,95±0,11 %	2,10±0,13 %

1982; Caklovica et al., 1986; Urosevic et al., 1986). These authors report that the portion of the rear part of the rabbit's carcass ranges from 31.4% to 36.5%, the back part ranges from 34% to 39.3% and the portion of the front part of the carcass ranges from 22% to 24%.

By dissection of the carcasses we determined a greater participation of muscle tissue and smaller participation of other basic tissues (bone, fat and binding tissues) in favour of the male rabbits (Table 3).

The determined portion of the bones is larger and the portion of the fats and binding tissues is smaller than the results reported by Niedzwiadek (1979 & 1980). The results from the dissection are similar to the results stated by Panic et al. (1980).

### CONCLUSIONS

1. The female rabbits compared to the male rabbits had achieved greater yield for 0.16 % i.e. 0.75%.

2. The mass of the most qualitative parts of the carcass was greater for the female rabbits.
3. The portion of the muscle tissue in the overall mass of the carcass was greater for the male rabbits.
4. No significant difference was detected in the portion of the internal organs in the overall mass of the carcass.
5. Female; and males in rabbits no statistically significant effect on meat and composition of carcasses rabbits.

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