

## PHENOTYPIC CONNECTION OF THE MAIN BODY PARTS OF RABBITS AND LAYERS

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**Abstract:** Nowadays in some west European countries increase the need of rabbit meat. The production of rabbit's meat in these countries is based on some practical knowledge and methods of selection and breeding. The success in production of this kind of meat depends from the rabbit's fat or from the quality of the body during the transport (confectioning meat). That is the reason why in these countries the selection of rabbits is making with a big attention. That is why is important to examine the phenotypic connection of the slaughter's characteristics during the confirmation of the optimal selective criterion. The mass of the thighs and the mass of the muscle layer of the thighs are very important for the rabbit's selection. The thigh's mass has strong phenotypic correlation and full genetic correlation with the mass of the clean body. The purpose of this investigation is to find the range of connection of the thigh's dissection based on correlative and regressive analysis in the prediction of the thigh's meat contribution and also from the clean body. Based on the obtained results we can conclude that the mass of the thighs is a reliable indicator as to the yield of the thigh as for the whole body musculature.

**Key words:** rabbit's meat, phenotypic correlation, genotypic correlation

### Introduction

Production of rabbit meat is based on practical knowledge and methods of breeding and selection. In order to determine the optimal criteria selection studying the relationship between rabbit phenotypic characteristics has great significance (*Kapitan 2006*). Feeding of rabbits have a major impact on the quality of rabbit meat. Selection of rabbits coefficients are significant phenotypic in genotypic correlation between age and weight of the carcass clean, the mass of the thighs and the mass of the muscle tissue of the thighs (*Flank et al., 1979*). The mass of the thighs is very strong phenotypic and genotypic correlation with the weight of the

carcass clean. The mass of the thighs is very strong indicator of the yield of meat in the body (*Niadzviadek et al., 1980, 1983*).

All of authors examined the phenotypic and genotypic correlations (*Flak et al., 1979; Niazviadek 1980; Niazviadek 1983; Panic et al., 1989*). These authors discovered that the coefficients of phenotypic correlations between the age and the mass of the cleaned body.

The aim of our research is based on correlation and regression analysis to determine the degree of safety of dissection of the thigh in the assessment of yield of thigh meat and the carcass clean.

## Materials and Methods

For testing we used 22 hybrids of California and New Zealand rabbit. Rabbits are fed with at libidum balanced food containing alfalfa, barley, corn, wheat, soy, granules sunflower premixes, salt, vitamins and minerals.

Slaughtering and primary processing of rabbits was performed in the usual way. After 24 hours cooling of carcass at a temperature of +4°C the bodies were cut in basic peaces and measuring them on an electronic balance with accuracy of 0.1 g. After the slaughtering we get the following parts: pelvic thigh part, groin part, shoulder part and part of back and chest.

After slaughtering the carcass of basic parts is performed the dissection of the right thigh and it is determined the participation of fat, bone and muscle connective tissue in the total mass of the thigh.

Average values and variability of indicators of basic parts of the body and tissues is determined with variation statistical method and with the correlation and regression analysis is determined their mutual connection .

## Results and Discussion

The average mass of rabbit's carcass was 2467 grams. Most of body was formed with the parts with the best quality of meat. So the mass of the pelvic part of the thigh averaged 420.5 g or 30.67 % . The groin part mass was 398.5 g. or 29.04%. The forelegs part of 300.5 g. or 21.94% and neck –breast part with 267.75 g. or 18,35% of the average mass of the body. Participation of the basic parts of a carcass in these rabbit pox in the research are consistent with results obtained from (*Panic et al.,1989*).

With the dissection of the right thigh is found that the average mass of muscle tissue was 168 g or 76.42%, fat tissue 3.65 g. Or 1, 72% connective tissue 5.60 or 2.5% and 43.5g bone tissueor19.5%.Unlike the basic parts of the body, muscle tissue and bones of the thigh which varied from 5.7 to 10. 6% mass of fat and connective tissue manifested very high phenotypic variability (42.5% and 56.2%) indicating that these properties do not have a normal frequency

distribution. The determined participation of the bones is higher and the muscle and fat tissue is smaller than the results indicated by (Niedziadek *et al.*, 1979, 1980). The results obtained from dissection are in accordance with the results given (Panic *et al.*, 1989) who examined New Zealand white rabbit. Proceeds of the basic parts of the body and tissues of the thigh is shown in Table 1.

**Table 1. Proceeds of the basic parts of the body and tissues of the thigh**

Properties	x	sx	Sd	CV( %)
Carcass weight g	2467	0.012	0.052	8.52
Pelvic - thigh part	420.5	4.2	22	4.72
Flank part	398.5	6.2	29.5	11.8
Forelegs	300.5	4.72	22.0	11.6
Neck - breast part	267.0	4.52	19.20	6.78
Meat boot g	168	2.2	12	7.2
Bones of thigh g.	43.5	0.8	4.2	9.8
Connective tissue boot g	5.60	0.4	2.4	42.5
Adipose tissue from thigh g	3.65	0.4	2.0	56.2

The mass of the trunk had a strong positive correlation with the mass of the thighs and shoulder part ( $r = 0.673+++$  and  $0.650+++$ ) and very strong statistically significant correlation with the mass of groin part, shoulder section and the mass of the musculature of the thigh ( $r=0.833+++$ - $0.857+++$ ).

The mass of the thighs and the amount of muscle from the thigh stand in strong correlation ( $r = 0.840+++$ ) groin part mass and chest neck part in a strong ( $r = 0.629$  and  $0.702$ ) shoulder part mass in middle correlation ( $r = 0.480++$ ) with a mass of muscle tissue from the thighs. Coefficients of phenotypic correlations (above diagonal) and linear regression (below diagonal) yields the basic parts of the body and tissues of the thigh is shown in Table 2.

**Table 2. Coefficients of phenotypic correlations (above diagonal) and linear regression (below diagonal) yields the basic parts of the body and tissues of the thigh**

Properties	X1	X2	X3	X4	X5	X6	X7	X8	X9
Weight of carcass $\tau$ (x1)	-	0.673***	0.840***	0.650***	0.833***	0.857***	0.343	0.083	0.404*
Pelvic thigh part (x2)	0.226	-	0.458***	0.271	0.653***	0.840***	0.349	0.171	0.035
Flank part (x3)	0.326	0.533	-	0.370*	0.671***	0.629***	0.132	-0.180	0.269
Forelegs $\Gamma$ p (x4)	0.179	0.223	0.263	-	0.336	0.480**	0.002	0.000	0.527**
Neck breast part (x5)	0.204	0.480	0.424	0.299	-	0.702***	0.474***	0.080	0.104
Mass of thigh (x6)	0.138	0.407	0.261	0.282	0.462	-	0.335	0.073	0.306
Bones of thigh (x7)	0.019	0.057	0.019	0.000	0.105	0.113	-	0.127	0.005
Connective tissue boot g (x8)	0.02	0.016	-0.014	0.000	0.010	0.014	0.066	-	0.229
Adipose tissue from thigh (x9)	0.012	0.003	0.018	0.050	0.011	0.050	0.002	0.198	-

\*= $p < 0,05$  ; \*\*= $p < 0,01$  ; \*\*\*= $p < 0,001$  ;

*Flak et al. (1979)*, found a strong correlation between the mass of clean carcass with the mass of the basic parts of rabbit's carcass and fully genetic correlation of the mass of the cleaned carcass and its basic parts ( $r = 0,941-0,987$ ). *Panic et.al. (1989)*, found that the mass of the clean carcass and the mass of the thighs are reliable indicators of rand man of thigh muscle part. Because this is in complete correlation with the yield of total body musculature we can conclude with high accuracy that the mass of clean hot and cooled carcass and the mass of the thighs are also quite reliable indicators for the total amount of muscle tissue in the body.

The results obtained can be used for evaluating the body of rabbits and in selection of breeding material for constructing of selection index.

## Conclusion

Based on the examinations and the obtained results we find the following conclusions

The mass of the cleaned carcass can be considered a reliable indicator of total yield of the thighs and the thigh's musculature. The mass of the thighs is a reliable indicator as to the yield of the thigh as for the whole body musculature. Linear regression coefficients obtained from these tests can be useful for the construction of the selection index for evaluating properties of slaughter characteristics of rabbits in the combined test and progenitors testing.

## Fenotipska povezanost osnovnih delova trupa i tkiva kod kunića

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## Rezime

U poslednje vreme u nekim zapadno evropskim zemljama sve više raste potražnja mesa kunića. Proizvodnja mesa kunića u ovim zemljama se zasniva na praktičnim saznanjima i metodama selekcije i odgajivanja. Uspeh u proizvodnji ovog vida mesa zavisi od utovljenosti kunića ili kvalitetu trupa pri izvozu (konfekcionirano meso). Zato se u ovim zemljama posvećuje velika pažnja selekciji kunića. U tu svrhu veliki značaj ima proučavanje fenotipske povezanosti klaničnih osobina pri utvrđivanju optimalnih selekcijskih kriterijuma.

Sa ispitivanjem fenotipskih i genotipskih korelacija bavilo se više autora (*Flak i sar.1979; Niedzwwiadek, 1980, 1983; Panic i sar. 1989*). Ovi auori navode da za selekciju kunića od posebnog značaja su koeficijenti fenotipskih i

genotipskih korelacija između uzrasta i mase očišćenog trupa, masa butova i masa mišićnog tkiva butova . Masa butova je u mnogo jačoj fenotipsko korelaciji i potpunoj genetskoj korelaciji sa masom očišćenog trupa.

Cilj ovog rada je da na bazi korelaciona regresiona analiza se utvrdi stepen povezanosti disekcije buta kako u oceni prinosa mesa buta tako i u očišćenom trupu.

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