RESEARCHES ON COMPARATIVE CHARACTERIZATION OF SENSORY AND NUTRIENT–BIOLOGICAL PROPRIETES OF MEAT HARVESTED FROM RABBIT AND HARE

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Abstract

The purpose of this study is to highlight the links on charcaterization sensory and biochemical muscle from rabbit ante end after slaughter house and field (color, flavor, tenderness, consistency and juicy meat). Was performed to determine the quantity and quality protein and fat of the main muscle groups of carcasses hares and pets. It also aims microbiological quality of meat (hygiene and technology factors) and its nutritional value in terms of chemical composition (content of vitamins, mineral substances, hormones, protein, fat, water end collagen). Evolution of pH was determined hare meat after slaughter, during maturation, until autolyzer, dry-and altering it (the enzyme mechanism, physico-chemical factors of variation of maturation-tenderness meat).

Key words: rabbit, hares

INTRODUCTION

The meat means all striated muscle tissues that come about naturally, together with connective tissues: lax, fibrous, cartilage, fat, bone and nervs, blood vessels and lymph nodes. The proportion of different tissues of meat depends on the species, breed, age, sex, state of fattening and carcass region [2].

In the rabbit meat, the sensory properties are some of the main criteria influencing consumers choice (Dalle Zotte, 2002), in particular the tenderness and flavor. It must not be neglected any chemical composition and valuable nutritional properties of rabbit meat, especially high protein content and low in fat [1].

In Romania, in 1990, rabbit meat production was of 10 625 tonnes, then it decreaset rapidly, so that in 2000 was 71,77% lower, and in 2007 with 97,5% lower in comparison with the production in 1990 (after FAO data, 2009). Our country until 1999 exported rabbit meat especially in Italy, France, Germany, and since 2003 the market needs of the product was achieved in particular through import.

The rabbit (Baselaga, Garcia, 2002) has higher capacity of production and breeding than other species, making an important contribution in the struggle, worldwide, to increase the supply of animal protein [4].

According to ITS (Integrated Taxonomic Information System) the rabbit falls taxonomic in this way:

Class: Mammalia
Genus: Glires
Order: Logomorpha
Family: Leporidae
Genus: Oryctolagus and Lepus [12].

Genus Oryctolagus has one species: Oryctolagus cuniculus or hare hole, the rabbit that was obtained by taming pets [6]. The complete scientific name of the hare hole is Oryctolagus cuniculus and is composed of the greek words “oryctor” which means “digging”and “lagos” which means rabbit, so in Romanian “rabbit that dig”. The ord “cuniculus”comes from Latin and means “earth, gallery” [12].

Genus Lepus has two species: Lepus europeus (hare) and Lepus timidus.

All breeds and varieties of domestic rabbit have to their origins a single wild ancestor – hare hole, called lapin or rabbit.

Sensory and biochemical characterization of rabbit meat

Omojola A.B. (2007) presents the influence of slow bleeding on sensory properties of rabbit meat from New Zealand race. Besides color and juicy, which decrease with a significant value (p<0,5), the other sensory properties such as consistency, aroma, flavor, are not affected by slow bleeding (p>0,5) of carcasses[15].

Arino B., Hernandez P., Pla M., Blasco A., (2007), used in experiments rabbits from three synthetic lines. Sensory analysis was conducted on longissimus dorsi muscle and the parameters evaluated were: juicy(J), consistency (H), fibrous structure (F), flourines (FL), rabbit flavor intensity (IRF), the smell of anise (AO), aniseed flavor (AF), the smell of liver (LO), liver favor (LF). Sensory analysis was pwerformed on samples of longissimus dorsi muscle, cutting it will design a complete block. Sample were vacuum packed and were heated to 80^{0}C for one hour, then were cut into four pieces and were distributed in such way as to eliminate any effect of location of muscle in carcasses from group members [1].

Table number 1
Average score for esch feature of sensory analysis (scoring scale 0-9) by the metod of Bayesian analysis

Average score	**Juicy**	**Texture**		**Fibrous structure**	**Flournes**
	1.10	2.56		1.50	2.05
Average score	IRF	AO	AF	LO	LF
	2,52	0,18	0,25	2,05	1,43

Intensity of rabbit flavor (IRF), anised odor (AO), anised flavor (AF), the small of liver (LO), liver flavor (LF).

They concluded that the line of origin, has an important influence on some sensory characteristics wich determine the meat tenderness of rabbit. For other sensory characteristics not found any effect of the line of origin, or the effect found was very small. The animals were adults at the same level when measurements were made, so we can consider that the differences found between lines were influenced by genetic origin and not by the degree of maturity [2].

In the sensory map made by Rodbotten et al. (2004) comparing meat from 15 comercial species of animals, rabbit meat was placed among the finest. Its juici is medium-low, sharply lower, small fibrosa, high finesse being considered the meat with the lowest intensity of color, odor and flavor and among those with the smallest left fatty in the mouth in mastication [5].

Nutrition and weigh at slaughter (Ouhayoun, 1989) and sex (Lebas et al., 2000; Delmas, 2000; Pla et al., 1998) were described as factors influencing the quality of rabbit meat. Weight or age, greatly influences the quality of rabbit meat, while food restriction has a moderate effect (Dalle Zotte, 2002). Thus, Ouhayoun (1992) showed that tenderness estimated by sensory analysis improuves itssey with the weight of certain genetic types, as a consequence of increased intramuscular fat [5].

Greater weight would also change the color of meat whil reducing cooking losses (Pla et al., 1998). In terms of nutrition and physiology of the digestive system, rabbits limits of variation of diet composition is, therefore, why there are small effects of diet on rabbit meat quality (Xicato, 1999). Although there tere is no change change in the energetic level and in the rationalizing food during the fattening period with effects in color or water retention capacity, the results of these strategies on the supply of rabbit meat pH remains controversial (Dalle Zotte & Ouhayoun, 1998; Dalle Zotte, Ouhayoun et al., 1996; Dalle Zotte, Remignon et al., 2005; Perrier & Ouhayoun, 1996), but showed no significant adverse effect on sensory quality of meat (Larzul, Thebault , et al., 2004) [5].

Determination of quantity and fat quality of the main muscle groups of rabbit end hare carcasses

Several studies (Hernandez Aliagla, Pla & Blasco, 2004; Larzul, Gondret, 2005, Combes & Rochambeau, 2005, Metzger et al., 2006) regarding the selection of rabbits, have demonstrated the effect of growth rate and live weight on carcass characteristics and meat quality. Most of these studies are related to the estimation of fat deposits (Kövér et al., 1998, Pascual et al., 2000). Pascual et al. (2000), using real-time ultrasound (RTU) for estimating body development in young rabbits pets, concluded that this technique was an accurate method for assessing the weight of fat perirenal and total fat from carcass weight[17].

Marsico et al., 2003, highlights the differences in chemical composition of rabbit meat and rabbit field, putting particular emphasis on visible differences in the quantity and quality of its fat, which is expected to be observed because of differences of activity (Konjevic D., 2007) [13].

Carcasses of rabbits have a low content of fat dissected (Pascual & Pla, 2007; Pla Hernández & Blasco, 1996) and is not used as a factor in assessing quality.

C. Corino, D.P. Lo Fiego et al. (2007) has shown the importance of added linoleinic conjugate acid (ALC) and vitamin E in the diet of rabbits highlighting their importance in determining the quality of meat and fat. Conjugated linoleic acids are geometric isomers of linoleic acid (LA: 18:2 C9, C12). Many biological effects of ALC were described and large volume of evidence shows that these fatty acids modulate cell growth, use and storage of nutrients and lipid metabolism (reviewed by Pariza, Park, & Cook, 2001; Mersmann, 2002). Studies on pigs indicate that ALC lowers the amount of carcass fat and improves muscle mass production, although data on feed efficiency and growth rate in animals are conflicting in different species (Thiel-Cooper, Parrish et al., 2001 , Wiegand, Sparks et al., 2002, revised Dugan, Aalhus, 2004, Corino et al., 2006). There is considerable interest in supplementing animal feed with conjugated linoleic acid (LAC) in the hope of providing wholesome meat products made for human consumption: clinical studies in laboratory animals suggest that ALC could be done to improve human health through several mechanisms, including by reducing filing fat (Pariza, 2004), it having antioxidant qualities, and strengthening anti-cancer immunity while reducing also inflammation and other beneficial effects typically associated with an increase in immunity [6].

Main component of vitamin E, α-tocopherol is one of the most effective liposoluble antioxidants (Mallet, Chernovtsy, et al., 1994). Entering in the food ration of rabbit α-tocopherol has the effect of increasing its concentration in muscle, protecting polyunsaturated fatty acids in muscle against oxidative damage, being associated with a reduced production of oxidation products of cholesterol, which has toxic effects (Buckley, Morrissey et al., 1995).

In a recent study, C. Corino, D.P. Fiego Lo et al., (2007) have found that ALC added in rabbit food, improves oxidative stability of their muscles, increased durability, decreased lipolytic enzyme activity and reduce triglycerides and total cholesterol from blood plasma. ALC also reduced the amount of fat in rabbit carcasses weighing over 3.2 kg (Corino, Mourot et al., 2002), but not in those with weight below the amount mentioned[5]

C. Corino, D.P. Fiego Lo et al., (2007) found that the addition of isomers of ALC in the food ration of rabbit changes fatty acid content in lipids and reduce lipid oxidation. The effect of α-tocopherol acetate to prevent oxidation of lipids was confirmed when longissimus dorsi muscle case. Increased levels of ALC, from about 1.3 to 10.4 mg / 100 g of eatible meat, suggests that it com be improved the nutritional quality of rabbit meat for human consumption. Further analysis, given the ALC isomers in pure form, could be made in order to study the effects of specific isomers, on the improvement of meat quality, body fat, lipid oxidation and the potential for interaction with α-tocopherol [5].

Carriho MC et al., (2009) have shown the effect of fattening ration given during weaning on the development of fatty acid profile in rabbit meat. Study the influence of feeding on fatty acid composition was performed on a total of 96 individuals. The animals were slaughtered at a weight of about 1.6 kilograms after having eaten for 3 weeks, feed with a mixture of fiber: decreased (14.28%), medium (18.4%) and high (20, 48%) also were killed and after 2-

2,3 kg concentrated feed consumed without added drugs, from trade(8). In conclusion, intramuscular fat percentage increased during the fattening period. The level of unsaturated fatty acids decreases with increasing weight of rabbits, due to a reduction in polyunsaturated fatty acids when their ration of food is richer in fiber [6].

P. Hernandez et al., (2008) have shown the influence of genetic origin of rabbits on the lipid content, lipolytic activity and fatty acid composition of meat taken from the region and on perirenale fat. Were studied the changes intervened in the free fatty acids and oxidative parameters during chilling. Experiments were conducted on three lines of rabbits, that were taken to study at the same age, so the differences they found between them have genetic origin and do not depend on the degree of maturity[11].

Nutritional value of rabbit meat in terms of chemical composition

Mevlut Škandro, et al., (2008) determined the chemical composition of rabbit meat, making a comparison between males and females, results are given in table number 2 [18].

Table2
Basic chemical composition of rabbit meat

Values	Water %	Protein %	Fat %	Mineral subsatances %
Males				
Minimum	74,90	21,55	0,52	1,23
Maximum	75,80	22,80	0,85	1,35
Average	75,21	22,16	0,66	1,29
Females				
Minimum	73,80	21,20	1,19	1,14
Maximum	75,50	22,80	1,70	1,22
Average	74,49	22,13	1,40	1,18

M. Hermida et al., (2006) provide baseline data on the chemical structure of rabbit meat, focusing on its mineral analysis. For determinations used a total of 54 rabbits, having three different ages: 50, 70 and 90 days. Average weight of carcases on slaughter was 700 g, 1000 g and 1400 g for 50 rabbits, 70 and 90 days respectively. The authors cited showed macrominerales quantity and microminerales (trace elements) contained in muscle tissue [10].

In table number 3, are the results obtained on the quantity macrominerales: the mean, standard deviation, the range of ashes, phosphorus, potassium, sodium, magnesium and calcium for the three age groups and all the 54 rabbits (18 rabbits for each age).

Average concentrations of trace elements and macrominerals in tissue depend to a point, of how sampling of meat, animal age and varies with other factors, which often were not reported (M. Hermida et al., 2006). Therefore, comparisons of data obtained from different studies should be considered with some caution [10].

Media potassium mean is 32% by weight of ashes, being the most abundant of the elements determined in quantitative terms. The average 388 mg/100 g for rabbits is similar to values reported previously by Niinvaara and Antille (1973), Combes (2004) and Morieras et al., (2004) which means that 382, 404, and 360 mg / 100 g tissue. Potassium content of rabbit meat is the highest compared with other animals, as follows: in cattle, were found values at between 150-171 mg/100g, the pigs were between 172-175 mg/100g, birds from 248-259 mg/100g and sheep between 295-350 mg/100g (Morieras et al., 2004, Price & Schweigert, 1994). The second most important macrominerale is phosphorus, with an average of 19.5% by weight of ashes, which together with potassium amounts to almost 50% of its content. Sodium contributed an average of about 4.9% by weight ashes, similar to that reported average Morieras et al., (2004), 67 mg/100g, but was higher than that found by Niinivaara and Antille (1973) of 47 mg/100g and Combs (2004), of 49 mg/100g.

Table 3
Ash, the phosphorus, potassium, sodium, magnesium and calcium in rabbit meat

Age	Ash %	P mg/100g	K mg/100g	Na mg/100g	Mg mg/100g	Ca mg/100g
50 days Average and standard deviation Range	1.206±0.024 1.15-1.25	235±6.8 219-246	387±18.4 352-418	66±5.6 57-75	26±2.0 22-29	9.0±1.65 6.5-12.2
70 days Average and standard deviation Range	1.218±0.028 1.17-1.26	236±4.8 229-244	401±19.5 371-450	60±3.5 52-65	27±1.2 25-29	8.9±1.94 6.9-15.1
90 days Average and standard deviation Range	1.218±0.031 1.17-1.28	239±7.6 223-249	376±16.5 342-406	55±3.2 50-59	28±2.5 24-33	8.3±1.40 6.1-10.9
Total animals Average and standard deviation Range	1.214±0.028 1.15-1.28	237±6.6 219-249	388±20.6 342-450	66±6.3 50-75	27±2.1 22-33	8.7±1.68 6.1-15.1

Magnesium content of ashes totaled 2.2%, being higher than compared to other species and calcium totaled only 0.7% (Morieras et al., 2004, Combes, 2004, Price & Schweigert, 1994).

In the table number 4, are presented mean values, standard deviation and the range for zinc, iron, copper and manganese (Main microminerals) for the three age groups and for all the 54 rabbits taken in the study [10].

Table 4
The level of zinc, iron, copper and manganese for rabbit meat (mg/100g)

Age	Zn mg/100g	Fe mg/100g	Cu mg/100g	Mn mg/100g
50 days Average and standard deviation Range	10.5±1.10 8.5-13.4	5.36±1.65 2.93-9.22	0.89±0.326 0.58-1.71	0.35±0.087 0.21-0.51
70 zile Average and standard deviation Range	11.2±1.63 9.0-16.5	5.57±1.12 3.23-7.40	0.68±0,427 0.34-2.14	0.35±0.086 0.19-0.46
90 zile Average and standard deviation Range	11.0±1.39 8.1-13.8	5.74±1.28 3.77-9.11	0.79±0.277 0.41-1.41	0.29±0.108 0.13-0.48
Total animals Average and standard deviation Range	10.9±1.40 8.1-16.5	5.56±1.35 2.93-9.22	0.78±0.355 0.34-2.14	0.33±0.096 0.13-0.51

After M. Hermida et al., (2006), age has no direct effect on the microminerals concentration of rabbit meat taken in study ($p > 0.05$). The highest values were found for copper (45%) and lowest values were found for zinc (13%).

Iron has been classified as the second most abundant microminerals found in rabbit meat, with a value ranging 10-15 mg / kg (Combes, 2004, Falandyez, 1991; Filandyez et al., 1994) [10].

Konjević D. (2007) showed the importance of controlled hunts referring to the high potential of hare meat (Lepus europaeus Pallas) in the diets of people today. Regarding chemical composition, is readily revealed an almost identical composition of rabbit meat compared with the hare meat [13].

Slamecka et al. (1997), by trying the meat of the longissimus dorsi muscle and chest muscles, set the following values: the proportion of water in tissue 72.36 - 73.04 g/100 g, protein 23.87 - 24.53 g total fat and minerals 1.88-2.16 g 1.06 - 1.16 g. There were established also main indicators: cholesterol from 138 to 149 mg/100 g of tissue, 118,96-129,92 mg phosphorus, calcium from 49.09 to 57.27 mg Potassium 248.01 -- 271.33 mg, 61,90-78,05 mg sodium and magnesium from 28.89 to 32.12 mg. The authors said their research pH developments moves from 5.60 to 5.70 in 24 hours after the death of the hare and the potential water retention which is 28,99-30,22 g/100 g of tissue [13].

Skrivanko (2006), taking four samples of rabbits, determined the average amount of water in meat as 75.34%, 23.19% protein, fat, ash 1.12% and 1.16%. In this research found some differences in chemical composition depending on season and sampling area of the sample. The biggest difference is observed between the amount of fat and protein according to season, they were assigned metabolic changes in preparation for winter and increased activity during the spring and preparation for mating season [13].

Hare (Lepus Europaeus Pallas) has a huge potential in human nutrition. Since ancient times and today hare (Lepus Europaeus Pallas), was one of the most well known small game species. Observe the current negative trend of rabbit meat consumption in Europe. In accordance with its chemical and nutritional properties in particular hare meat is a valuable source for food production, in comparison with the valuable qualities of rabbit meat [13].

Rabbits meat, compared with meat coming from other animal species are at prominently nutrient containing 40.15% over 32.62% of chicken meat, 27, 11% of pig meat and 24.61% of the beef. Nutrient rabbit meat contains 70% protein, 19% carbohydrate, 17% fat and 4% minerals, with variations more or less based on race (in rabbits), maintenance status, gender, quantity and quality of feed varieties used in health food and rabbits healt.

Rabbit meat is from 1380 to 1820 calories per kilogram. It is rich in: phosphorus, over 64% (of the 4% for minerals), potassium - more than 29%, 4% calcium, sodium, iodine and other things that contribute to meat quality, these minerals being absolutely necessary and required in human body metabolism [8].

Evolution of pH of rabbit meat after slaughter

At 24 h after slaughter the pH of hare meat, is between 5,51-5,89 in the main muscle groups and in the major organs have higher averages: 6.32 in heart, liver 6, 36 and 6.53 kidneys. At 30 minutes after slaughter the pH of the meat varies primarily depending on the type of muscle, from which the sample (the lowest pH level meeting to the longissimus dorsi muscle, psoas and biceps femoris, to cervical and intercostal muscles that have found higher values of pH) and do not significantly vary by age and sex [3].

A. Blasco, M. Piles (1990) revealed pH of muscle in rabbits pets, which is measured in longissimus dorsi and biceps muscles femorisu being sampled from a total of 215 carcasses of rabbits, they are part of two different genetic lines: New Zealand and Californian [3].

Rabbits were weaned at 27-29 days, being placed in cages, with a density of 8 rabbits/ cage- for 42 days where they were fed with pelleted feed. The animals were slaughtered at an age of 70 days.

The slaughter house was close to the farm and therefore rabbits were not affected by transport stress. Two hours after slaughter, carcasses were chilled at temperatures between 0 and 20 C for 22 hours. Carcasses were weighed after slaughter and after 24 hours.

After 15 and 20 minutes after slaughter, pH was measured in longissimus dorsi muscle - at the level of the seventh lumbar vertebrae compared with that of the biceps femoris muscle. It was used a digital pH meter equipped with a penetrating electrode with a diameter of 3 mm, with an accuracy of 0.01 pH units. Rabbits killed, males and females were selected randomly.

Table No. 5, shall mean, standard error, standard deviation, coefficient of variation of carcass weight and pH. The pH value was slightly lower than the values obtained by Ouhayoun (1987), but similar to those of Ouhayoun and Delmas (1988).

How stress before slaughter probably varied, it is not surprising to come across that some authors found some differences in pH. After A. Blasco, M. Piles, 1990, the pH to 24 hours of longissimus dorsi muscle is lower than pH to 24 hours of the biceps femoris muscle, this is due to different metabolism of the muscles, the biceps femoris being of oxidative type. However, initial pH is higher in longissimus dorsi, which implies an absolute fall in pH faster. Relative pH decrease to the baseline is also higher in longissimus dorsi. There is no difference between the initial pH of the muscles analyzed, derived from selected lines of rabbits [3].

Table. 5

Average standard error (ES), standard deviations (SD), coefficient of variation of carcass weight (CV) and pH, determined on two breeds of rabbits (New Zealand and Californian)

New Zeelandez					Californian				
Specification	Average	ES	DS	CV	Average	ES	DS	CV	Semnific.
GC0	1224	12	121	0.10	1257	12	119	0.09	NS
GC24	1206	12	120	0.10	1238	12	116	0.09	NS
pHL0	6.72	0.008	0.08	0.01	6.72	0.009	0.09	0.01	NS
pHL24	5.66	0.007	0.06	0.01	5.71	0.007	0.06	0.01	*
spHL	1.05	0.012	0.11	0.10	1.00	0.013	0.12	0.12	*
spHL/pHL0	0.15	0.001	0.01	0.09	0.14	0.001	0.02	0.11	*
pHB0	6.60	0.011	0.11	0.01	6.60	0.014	0.13	0.02	NS
pHB24	5.77	0.007	0.06	0.01	5.82	0.007	0.06	0.01	*
spHB	0.83	0.014	0.14	0.17	0.77	0.016	0.15	0.20	*
spHB/pHB0	0.13	0.002	0.02	0.15	0.12	0.002	0.02	0.18	*

NS: no significant difference between lines;

*:Significant differences between lines ($P < 0.05$).

Have been pursued following analysis: GC0-carcass weight after slaughter, carcass weight GC24-24 hours after slaughter pHL0-longissimus dorsi muscle pH at 15-20 min after slaughter pHL24-longissimus dorsi muscle pH at 24 hours after slaughter spHL-absolute decrease of pH longissimus dorsi muscle (pHL0-pHL24) spHL/pHL0- relative decline in the pH pHB0 - pH biceps femoris muscle in 15-20 minutes after slaughter, pHB24-pH biceps femoris muscle 24 hours after slaughter, the absolute decrease spHB-ph biceps femoris muscle (pHB0-pHB24) and spHB/pHB0 - the relative decline of pH biceps femoris muscle.

Correlations between carcass weight and pH values were close to 0 in all cases and in both breeds of rabbits. It was not found any relevant correlation between initial pH and final, but in this regard is a relatively high correlation between low pH of the initial and final, it is probably an artificial correlation, because both values are part of pH decline absolutely. There is some correlation in the two races, the pH of the longissimus dorsi muscle and the muscle biceps femoris cela.

The differences observed between pH longissimus dorsi muscle and the biceps femoris muscle, suggests that there are some differences in metabolism between animals (A. Blasco, M. Piles, 1990). A.B. Omojola, (2007), shows the effect of the slow bleeding of rabbit carcasses on meat quality, in terms of organoleptic properties and pH value. The study was conducted on a total of 48 individuals of the race Neo Zealand came of age and having an average weight of 2060 g, were fed with concentrated feed for another 35 days after weaning [15].

After slaughter carcasses were chilled at 40C for 24 hours. The results showed that carcass weight, percentage of juice lost and carcass pH were not affected (P> 0.05) of slow bleeding, although the volume of blood drained decrease (P <0.05) in proportion to the increased period of stunning and bleeding. Volume juice drip lost during chilling and lost during preparation of meat increased as the time elapsed between stunning and bleeding increased and as the water retention capacity decreases. The slow bleeding on shear strength, water retention capacity, the loss of juice and cooking losses become more pronounced with increasing age of the animal [15].

Microbiological quality of rabbit meat

To evaluate the microbiological quality of meat (Banu C. et al, 2003), we must have regard to its degree of contamination with microorganisms of spoilage and pathogenic parasite infestation possible presence of mycotoxins, pesticides, heavy metals, hydrocarbons polycyclic condenaste from feed and the presence of hormones and antibiotics given to them in life [2].

The main types of microorganisms that contaminate meat are: Pseudomonas, Bacillus, Micrococcus, Mucor, Rhizopus (Georgescu G., Banu C. et al., 2000).The most common pathogenic bacteria are: Clostridium botulinum and Clostridium perfringens, Staphylococcus aureus, Sallmonella, Escherichia coli, Listeria monocytogenes, etc. [8].

The meat of hares presents the danger of contamination with any germs coming from the digestive tract, this taking place when evisceration is delayed by passing the intestinal barrier and the blood circulation of microbes to muscle tissue [2].

Regarding sanitation factors Skrivanko (2006), were found inadequate performance index that determines shortening microbiological validity of meat and also shows the consequences of incorrect procedures that use hunting shot cartridges (Konjevic, 2008)[13].

Skrivanko (2006) shows that the validity of rabbit meat is of difficult interpretation (to shorten) and under Regulation Ministry of Health completed research, as summarized 23.94% of the total sample do not comply with the regulation of toxins, metals, metalloids and other harmful substances that can be found in food. They are found in particular organs and meat samples are obtained by hunting. However organs from animals hunted are rarely used in human diet, which containing the toxic metal. Moreover, some evidence from carcasses of rabbits older than 3 years, which certainly have more possibility of accumulation of heavy metals [13].

General

Rabbit meat is fine, tasty, succulent and nutritive value of their production being the main addition to the production of fur, hair, wool and leather). The proteins in meat rabbits are assimilated by the human body 90%, with an excellent food particularly for youth, indicated for the restoration of tissues from patients and convalescenții of all ages.

An important feature of rabbit and hare meat, unlike other meat is that fat is not deposited in the muscles, the fibers, thus benefiting consumers with fat-free regime. This raises a lot value of rabbit meat diet because, first, is rich in protein, on the other hand prevents deposition of fat in the body and thus prevents the installation of heart disease, of arteriosclerosis, the disease liver, the sterility, caused largely by abnormally stored fat in the body.

Fat rabbit is white or yellow, has a lower melting point and is thus more fluid than that of pigs, cattle and is more easily assimilated by the human body, with carbohydrates constituting a rich source of energy.

Return the rabbit meat is approximately 55-60% and growth by applying technologies and special diet iepuroaicelor and castrated rabbits, the yield may reach 70-75%.

As appearance, taste, digestibility and nutritional value and as a culinary processing, meat rabbits resemble turkey meat [9]. The meat of hares is a red meat with a rich nutritional value due to the high in protein, minerals and vitamins and low in fat content (a meat diet because of the possibility of removing fat, showing only marbling and not to pearl phenomenon) [19].

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