

Institute of Meat Hygiene and Technology  
Belgrade-Serbia



# PROCEEDINGS

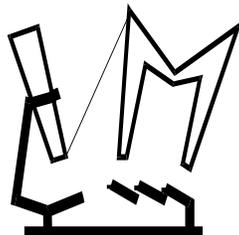
INTERNATIONAL  
57<sup>th</sup> MEAT INDUSTRY CONFERENCE

**MEAT AND MEAT PRODUCTS – PERSPECTIVES OF  
SUSTAINABLE PRODUCTION**

Belgrade, June 10<sup>th</sup>-12<sup>th</sup>, 2013

ISBN 978-86-82547-07-5

**INSTITUTE OF MEAT HYGIENE AND TECHNOLOGY – BELGRADE**



# **PROCEEDINGS**

International 57<sup>th</sup> Meat Industry Conference

**MEAT AND MEAT PRODUCTS – PERSPECTIVES OF  
SUSTAINABLE PRODUCTION**

Belgrade, 10<sup>th</sup>-12<sup>th</sup> June, 2013

**Editor**

Institute of Meat Hygiene and Technology

**For Editor**

Vesna Matekalo-Sverak, PhD

**Editors in chief**

Slobodan Lilić, PhD

Vesna Đorđević, PhD

**International Scientific Committee**

**President** Slobodan Lilić, PhD – *Serbia*  
**Vice President** Vesna Đorđević, PhD – *Serbia*

**Members** Schwägele Fredi, PhD – *Germany*  
Jeney Zsigmond, PhD – *Hungary*  
Tchernukha Irina Mikhailovna, PhD – *Russia*  
Žlender Božidar, prof. – *Slovenia*  
Steinhauser Ladislav, PhD – *Czech Republic*  
Talone Regine, PhD – *France*  
Vuković Ilija, prof. – *Serbia*  
Baltić Ž. Milan, prof. – *Serbia*  
Teodorović Vlado, prof. – *Serbia*  
Radovanović Radomir, prof. – *Serbia*  
Petrović Milica, prof. – *Serbia*  
Ćirković Miroslav, prof. – *Serbia*  
Matekalo-Sverak Vesna, PhD – *Srbija/Serbia*  
Spirić Aurelija, PhD – *Serbia*  
Milićević Dragan, PhD – *Serbia*  
Đinović-Stojanović Jasna, PhD – *Serbia*  
Velebit Branko, PhD – *Serbia*

## Editorial Board/Reviewers

Schwägele Fredi, PhD – *Germany*  
Jeney Zsigmond, PhD – *Hungary*  
Tchernukha Irina Mikhailovna, PhD – *Russia*  
Žlender Božidar, prof. – *Slovenia*  
Steinhauser Ladislav, PhD – *Czech Republic*  
Talone Regine, PhD – *France*  
Vuković Ilija, prof. – *Serbia*  
Baltić Ž. Milan, prof. – *Serbia*  
Teodorović Vlado, prof. – *Serbia*  
Radovanović Radomir, prof. – *Serbia*  
Petrović Milica, prof. – *Serbia*  
Ćirković Miroslav, prof. – *Serbia*  
Matekalo-Sverak Vesna, PhD – *Serbia*  
Spirić Aurelija, PhD – *Serbia*  
Milićević Dragan, PhD – *Serbia*  
Đinović-Stojanović Jasna, PhD – *Serbia*  
Velebit Branko, PhD – *Serbia*  
Estevez Mario, PhD – *Spain*  
Jakovac-Strajn Breda, docent – *Slovenia*  
Hengl Brigita, PhD – *Croatia*  
Milijašević Milan, PhD – *Serbia*  
Okanović Đorđe, PhD – *Serbia*  
Vranić Danijela, PhD – *Serbia*  
Parunović Nenad, PhD – *Serbia*  
Borović Branka, PhD – *Serbia*

## Organizing Committee

**President** Branko Velebit, PhD  
**Vice President** Saša Prečanica  
**Members** Danijela Šarčević, PhD  
Živko Kragujević  
Gordana Terzić  
Igor Milošević  
Ivana Branković-Lazić  
Bojan Balaž  
Andrea Končar

**ISBN 978-86-82547-07-5**

Number of copies/  
200 electronic copies

## PLENARY SESSION

	Page
Dejan Krnjajić, Branislav Raketić, Jelena Milić <b>Organic production – Serbia’s prospects</b>	1-7
Milan Ristic, Klaus Damme <b>Geflügelfleischqualität – Ein Vergleich zwischen konventioneller – und ökologischer Produktion von Broilern</b>	8-16
Radmila Marković, Vesna Đorđević, Milan Ž. Baltić <b>The Importance of Conjugated Linoleic Acid for Meat Quality</b>	17-23
Wolfgang Jira, Margarete Pöhlmann, Alexander Hitzel, Fredi Schwägele <b>Smoked Meat Products - Innovative Strategies for reduction of Polycyclic Aromatic Hydrocarbons by Optimisation of the Smoking Process</b>	24-32
Božidar Žlender, Tomaž Polak, Lea Demšar, Mateja Lušnic Polak <b>Polychlorinated Biphenyls in Meat and Meat Products: Possibilities for Risk Reduction</b>	33-40
Milan Ž. Baltić, Marija Bošković, Radmila Mitrović <b><i>In Vitro</i> Meat: Possibility of the Impossible</b>	41-47
Slobodan Lilić, Vesna Matekalo-Sverak, Danijela Vranić <b>Salty Taste – The Need or the Habit</b>	48-53
Mario Estévez <b>Meat Protein Oxidation: Scientific and Technological Relevance</b>	54-61
Ladislav Stainhauser <b>Impact of <i>Improvac</i> on Boar Taint and Sensory Acceptance of Pork</b>	62-63
Nenad Parunović, Milica Petrović, Vesna Matekalo-Sverak <b><i>Mangalitsa</i> - Meat Quality Properties</b>	64-73
Radomir Radovanović, Ilija Đekić, Igor Tomašević, Nikola Tomić, Nada Šmigić, Andreja Rajković, Vlade Zarić <b>Effects of Food Safety and Quality Management Systems in Serbian Meat Industry</b>	74-82
Oxana Kuznetsova <b>Food Safety and Quality from the Point of View of Legislation and Meat Science</b>	83-84

Maja Peraica, Dubravka Rašić, Dragan Milićević <b>Principles of Risk Assessment of Mycotoxins in Food and Feed by European Food Safety Authority</b>	85-91
Vesna Đorđević, Miroslav Ćirković, Dragana Ljubojević <b>Contamination of the Ecosystem with Organic Pollutants and its Impact on the Protection of Less Valuable Fish Species in Sava and Danube Rivers</b>	92-104
Vladimir Tomović, Marija Jokanović, Branislav Šojić, Snežana Škaljac, Tatjana Tasić, Predrag Ikonić <b>Cadmium Levels in Meat</b>	105-112
Jasna Đinović-Stojanović, Aleksandar Popović, Aurelija Spirić <b>Persistent Organic Pollutants in Food</b>	113-126
Régine Talon, Sabine Leroy <b>Bacterial Diversity and Safety in Meat Fermentation</b>	127-130
Neđeljko Karabasil, Mirjana Dimitrijević, Brankica Lakićević <b>Important Bacterial Hazards in Pork Production</b>	131-135
Branka Borović, Branko Velebit, Danka Spirić <b>Overview of Indigenous Epiphytic Microflora in Serbian Fermented Sausages</b>	136-142
Sabine Leroy, Branko Velebit, Régine Talon <b>Staphylococcal Food Poisoning and <i>Staphylococcus aureus</i> Enterotoxins</b>	143-144
Milan Milijašević, Jelena Babić, Aurelija Spirić <b>Effect of Modified Atmosphere and Vacuum Packaging on Selected Quality Parameters in Fresh Trout</b>	145-151
Jelena Petrović, Živoslav Grgić, Milica Živkov-Baloš <b>Molecular Diagnostics of <i>Trichinella</i> Species: New Data on <i>Trichinella</i> Life Cycle in Vojvodina Region</b>	152-157

#### POSTER SESSION

Radoslav Grujić, Krsmanović, I., Grujić, I., Vujadinović, D. <b>Development of Meat Chain Traceability System</b>	158-163
Mladen Rašeta, Vojin Vranić, Mirjana Grubić, Zoranka Grbić, Ivana Branković Lazić, Jelena Jovanović <b>Quality of Poultry Carcasses on the Slaughter Line in Relation to the Season</b>	164-168

Nataša Glamočlija, Marija Dokmanović, Jelena Ivanović, Radmila Marković, Jasna Lončina, Marija Bošković, Milan Ž. Baltić	
<b>The Effect of Different Broiler Provenances on Carcass Meatiness</b>	169-172
Jelena Babić, Dragan Milićević, Danijela Vranić, Dragan Milić, Breda Jakovac- Strajn	
<b>Seasonal Effect on Technological Properties of Chicken's Breast Meat</b>	173-177
Brigita Hengl, Marcela Šperanda, Manuela Grčević, Martina Jurković, Mislav Đidara	
<b>Essential Oils Components and Zeolite Clinoptilolite Impact on Poultry Meat Quality</b>	178-182
Breda Jakovac-Strajn, Dragan Milićević, Rahela Juršič-Cizerl, Gabrijela Tavčar- Kalcher, Katarina Pavšič-Vrtač, Olga Zorman-Rojs, Milan Pogačnik, Tanja Švara	
<b>Evaluation of Feed and Histopathological Lesions of Some Organs of Laying Hens – Possible Implication on Meat Quality</b>	183-188
Nikola Stanišić, Milica Petrović, Nenad Parunović, Slobodan Lilić, Čedomir Radović, Marija Gogić, Maja Petričević	
<b>Physicochemical Properties of Meat from Three Pig Breeds</b>	189-192
Marija Dokmanović, Nataša Glamočlija, Vladimir Tomović, Milica Todorović, Radmila Marković, Srđan Pantić, Milan Ž. Baltić	
<b>Influence of Sex and Castration on Carcass and Meat Quality Parameters in Pigs</b>	193-196
Vesna Janković, Vesna Matekalo-Sverak, Saša Janković, Zoran Pajić, Zoranka Grbić, Igor Janković	
<b>Importance of Meat in Regulation of Sports Anemia</b>	197-200
Ivana Kostić, Katarina Bukara, Vesna Ilić, Branko Bugarski	
<b>Effect of Bovine Blood Storage in Slaughterhouses on Parameters Relevant to Hemoglobin Isolation</b>	201-205
Branislav Šojić, Ljiljana Petrović, Tatjana Tasić, Natalija Džinić, Vladimir Tomović, Predrag Ikonić, Snežana Škaljac, Marija Jokanović	
<b>The Effect of Drying Conditions on Lipolytic and Oxidative Changes in Traditional Dry Fermented Sausage Petrovska Klobasa During Long Storage Time</b>	206-209
Marija Jokanović, Vladimir Tomović, Natalija Džinić, Ljiljana Petrović, Snežana Škaljac, Predrag Ikonić, Tatjana Tasić, Branislav Šojić	
<b>Texture Characteristics of Dry Fermented Sausage Petrovska Klobasa</b>	

<b>Dried in Traditional and Industrial Conditions</b>	210-214
Amir Ganić, Amir Čaušević, Enver Karahmet, Sandra Stojković, Davorka Ratković	
<b>Contribution to Technology and Quality Ham of Sheep</b>	215-220
Nadežda Prica, Milan Ž. Baltić, Milica Živkov-Baloš	
<b>Chemical Parameters of the Quality of Pâtés from Different Manufacturers from Novi Sad Market</b>	221-224
Mirjana Milanović-Stevanović, Slobodan Lilić, Dragica Karan, Mirjana Lukić, Nenad Parunović, Jelena Babić, Srđan Stefanović	
<b>Sensory Perception of Various Sodium Chloride and Potassium Chloride Water Solutions</b>	225-229
Mladen Rašeta, Ivana Branković Lazić, Danijela Vranić, Dejana Trbović, Lazar Turubatović, Jelena Jovanović, Slobodan Lilić	
<b>Salt Content of Poultry Meat Products</b>	230-233
Ivana Branković Lazić, Vladimir Korićanac, Miloš Pavlović, Slobodan Lilić, Danka Maslić-Strizak, Ljiljana Spalević, Zlatko Pejkovski	
<b>Content of Sodium Chloride and Sodium in Burgers from Retail</b>	234-237
Danijela Vranić, Dragan Milićević, Vladimir Korićanac, Dejana Trbović, Jelena Babić, Danijela Šarčević, Vojin Vranić	
<b>Cholesterol and Total Lipids Content in Raw and Heat-processed Chickens Meat</b>	238-243
Dragana Pešić Mikulec, Jasna Kureljušić	
<b>Food Testing in Accordance with the Law of Food and International Standards of European Union</b>	244-246
Jelena Đurić, Jelena Ivanović, Jasna Lončina, Danijela Šarčević, Vesna Đorđević, Marija Bošković, Milan Ž. Baltić	
<b>Examination about Consumers Knowledge of Food Storage Conditions in Household – Context of Food Safety</b>	247-252
Dragica Nikolić, Saša Janković, Srđan Stefanović, Tatjana Radičević, Danka Spirić, Zoran Petrović	
<b>Assesment of Cadmium Intake Associated with Consumption of Animal Originating Food in Serbia</b>	253-256
Zoran Petrović, Danijela Vranić, Jasna Đinović-Stojanović, Branko Velebit, Mirjana Lukić, Dragica Nikolić	
<b>Cadmium and Mercury Content in Liver and Kidneys of Wild Game Caught in Various Regions of Serbia</b>	257-262

Jelena Spasić, Aleksandar Popović, Danijela Vranić, Aurelija Spirić, Jasna Dinović-Stojanović <b>Organochlorine Pesticides and Polychlorinated Byphenils in Two Different Wild Fish Species from the Danube River (Serbia)</b>	263-267
Ružica Milovanović <b>Ecological Aspekt of Packaging Materials</b>	268-271
Branko Velebit, Brankica Lakićević, Branka Borović, Vesna Janković, Danka Spirić, Tatjana Baltić <b>Efficiency of Realtime PCR in Quantification of STEC in Sliced Meat Products</b>	272-275
Vladimir Kurćubić, Pavle Mašković, Slavica Vesković-Moračanin, Lazar Turubatović <b>Herb Extracts: Sources of Antioxidants and Antimicrobials</b>	267-280
Mirjana Dimitrijević, Neđeljko Karabasil, Vesna Đorđević, Jelena Petrović, Jelena Petković, Vlado Teodorović <b>Campylobacteriosis – Food as a Source of Infection</b>	281-284
Jelena Jovanović, Branko Velebit, Olivera Bunčić, Vera Katić, Mladen Rašeta <b>Prevalence of <i>Campylobacter</i> spp. in Serbian Poultry Slaughterhouses</b>	285-288
Mladen Rašeta, Olivera Bunčić, Vera Katić, Vesna Matekalo-Sverak, Vesna Đorđević, Jelena Jovanović, Vesna Janković <b>Hygiene of the Production Process of Minced Unformatted Meat and Safety Criteria</b>	289-292
Dragan Vasilev, Zorica Radulović, Nemanja Mirković, Dušan Kekuš, Milica Petrušić, Nikola Čobanović <b>Some Characteristics of Fermented Sausages Produced with Commercial Probiotic <i>Lactobacillus Casei</i> LC01 and Potential Probiotic <i>Lactobacillus Plantarum</i> 564 Isolated from Sjenica Cheese</b>	293-298
Slavica Vesković-Moračanin, Marija Škrinjar, Dragojlo Obradović, Dragica Karan, Lazar Turubatović, Vladimir Kurćubić, Pavle Mašković <b>The Effect of Bacteriocin and Modified Atmosphere Packaging on the Shelf Life of Sremska Sausage</b>	299-304
Slavica Vesković-Moračanin, Branka Borović, Branko Velebit <b>Basic Characteristics of Natural Isolates of Lactic Acid Bacteria</b>	305-308

Nataša Pavličević, Milan Ž. Baltić, Mirjana Dimitrijević, Vesna Đorđević, Radmila Marković, Milorad Mirilović <b>Sensory Evaluation of Selected Quality Parameters During Storage of Cold Smoked Trout Packed in Vacuum and Modified Atmosphere</b>	309-315
Đorđe Okanović, Miroslav Ćirković, Vesna Đorđević, Danijela Vranić, Dragana Ljubojević, Nikolina Novakov <b>Chemical Characteristics of Sausages Produced of Cyprinid Meat</b>	310-319
Ksenija Nešić, Nikola Pavlović <b>Current Mycotoxicological Profile of Serbian Feed</b>	320-323
Sunčica Kocić-Tanackov, Gordana Dimić, Ljiljana Mojović, Jelena Pejin, Aleksandra Đukić-Vuković <b>Toxigenic Micropopulation in Some Meat Products</b>	324-330
Vesna Janković, Branka Borović, Branko Velebit, Radmila Mitrović, Brankica Lakićević, Danka Spirić, Tatjana Baltić <b>Comparative Mycological Analysis of Spices Used in Meat Industry</b>	331-334

## THE EFFECT OF DIFFERENT BROILER PROVENANCES ON CARCASS MEATINESS

Nataša Glamočlija<sup>1</sup>, Marija Dokmanović<sup>1</sup>, Jelena Ivanović<sup>1</sup>, Radmila Marković<sup>1</sup>, Jasna Lončina<sup>1</sup>,  
Marija Bošković<sup>1</sup>, Milan Ž. Baltić<sup>1</sup>

<sup>1</sup> Faculty of Veterinary Medicine, University of Belgrade, Serbia

**Abstract – The aim of this study was to determine the effect of different provenances (Cobb, Ross and Hubbard) on carcass meatiness. The study was conducted on 180 broilers of Cobb provenance, 90 broilers of Ross provenance and 60 broilers of Hubbard provenance and carcass quality parameters were measured (live weight, cold carcass weight, weight of breasts and thighs with drumsticks, as their proportion in cold carcass weight). Broilers of Cobb provenance had significantly higher average live weight, cold carcass weight, breast weight and proportion of breast compared to broilers of Ross and Hubbard provenances. Opposite to that, broilers of Hubbard provenance had significantly higher proportion of thigh with drumstick compared to Ross and Cobb broilers.**

**Key words – Cobb, Ross, Hubbard, carcass quality.**

### I. INTRODUCTION

Modern birds grow very fast due to genetic selection, efficient production systems, improved nutrition, and regular veterinary attention. Meat chickens reach a market weight as early as 6 weeks and have high breast meat yield. The primary goal of broiler breeding is to improve profitability of broiler meat production. Until recently most birds were sold whole, but there has been dramatic increase in proportion of birds being grown for portioning and further processing. Poultry production and processing technologies have become rapidly accessible and are being implemented on a worldwide basis, which will allow continued expansion and competitiveness in this meat sector. Therefore, the success of poultry meat production has been strongly related to improvements in growth and carcass yield, mainly by increasing breast

proportion and reducing abdominal fat. In addition, to carcass yield discussed above, post-mortem factors such as processing and cooling carcasses have a significant impact on yields. Technologically differing equipment for carcass processing may be a factor that affects carcass weight. Sometimes the cooling process can be the deciding factor for carcass yield. Carcass weight can be significantly reduced when it is cooled in a stream of cold air. On the other hand, combined cooling, cooling in water first, and then in a stream of air, can increase carcass weight of broilers. Most authors believe that higher chicken weight before slaughter is related to higher weight of valuable parts such as breasts, thighs and drumsticks than the less valuable parts such as wings, neck and back with the pelvis. It should be kept in mind that among all the mentioned factors, conformation of carcass and class (extra A, A, B or C) is based on the proportion of the main parts of broiler carcass. The proportion of bone is higher and proportion of meat is lower when conformation or class of carcass decreases [1]. Improvements in genetics, diet and other factors make it possible that six weeks old chicken has a live weight around three kilograms, while 50 years ago 16 weeks was needed to achieve this [2]. It is generally known that the live weight of broiler has determining impact on carcass yield, so broilers of the same age with greater live weight show higher carcass yields. Genetic improvements contributed to better carcass conformation, higher carcass yield and increased breast participation in the total carcass weight. Demands for high quality parts and further processing forced poultry industry to change its marketing practices. In the seventies, most of poultry in US was sold as whole carcasses, while

in nineties situation was changed and the largest part of poultry was sold as parts or further processed foods. Today, yield of high value items such as breasts and boneless filets has become critical to processors. Several factors have been shown to affect yield of parts. These factors include strain, sex, age, health, nutrition, live weight, length of feed withdrawal before processing, and carcass downgrading. Early studies focused on nutritional requirements and management practices that maximized growth and minimized feed conversion. More recently, attention has been paid on comparing eviscerated carcass yield and parts in different broiler strains, particularly among fast growing strains [3]. Of all types of poultry meat in human nutrition the most common is broiler meat. In the market of Germany the most common provenances of broilers are ASA, AA, Hybro, Lohmann, Ross, Shaver, Pilch, Peterson and Cobb (4), while in Serbia the most common are Cobb, Hubbard and Ross broilers. So the aim of this study was to determine the effect of different broiler genetics (Cobb, Ross and Hubbard) on carcass meatiness.

## II. MATERIALS AND METHODS

The study was conducted in Serbian slaughterhouses from April to June 2012 on 180 broilers of Cobb 500 provenance, 90 broilers of Ross 308 provenance and 60 broilers of Hubbard Classic provenance of both sexes. Among provenance, broilers differ in age, live weight, diet, breeding, transportation, etc. Carcass quality parameters were measured (live weight, cold carcass weight, weight of breasts and thighs with drumsticks, as their proportion in cold carcass weight). Mean values and measures of variations were calculated and the groups were compared with ANOVA statistical test. Data were analyzed using the statistical package GraphPad Prism 5.00.

## III. RESULTS AND DISCUSSION

The results of this study are shown in Table 1.

Table 1 The carcass quality parameters of three broiler provenances

Parameters		Cobb (n=180)	Ross (n=90)	Hubbard (n=60)
LW (kg)	$\bar{X}$	2.29 <sup>AB</sup>	2.11 <sup>A</sup>	2.11 <sup>B</sup>
	Sd	0.47	0.27	0.27
CCW (kg)	$\bar{X}$	1.69 <sup>AB</sup>	1.50 <sup>A</sup>	1.50 <sup>B</sup>
	Sd	0.36	0.19	0.19
BW (g)	$\bar{X}$	607.63 <sup>AB</sup>	504.10 <sup>A</sup>	480.37 <sup>B</sup>
	Sd	149.27	70.87	73.91
BW/CCW (%)	$\bar{X}$	35.69 <sup>AB</sup>	33.80 <sup>AC</sup>	31.83 <sup>BC</sup>
	Sd	2.89	4.30	2.86
TDW (g)	$\bar{X}$	474.82	460.04	480.63
	Sd	93.03	61.19	73.07
TDW/CCW (%)	$\bar{X}$	28.24 <sup>AB</sup>	30.82 <sup>Aa</sup>	32.03 <sup>Ba</sup>
	Sd	2.12	3.45	3.30

Legend: LW - Live weight; CCW - Cold carcass weight; BW - Breast weight; BW/CCW - Breast weight in relation to the cold carcass weight; TDW - Thigh with drumstick weight; TDW/CCW - Thigh with drumstick weight in relation to the cold carcass weight

Within columns, letters a, b, or c, where the same, show significant difference ( $p < 0.05$ ); letters A, B, or C, where the same, show significant difference ( $p < 0.01$ ).

Broilers of Cobb provenance had significantly higher ( $p < 0.01$ ) live weight (2.29 kg) compared to broilers of Ross and Hubbard provenances (2.11 kg). Depending on the habits of consumers in the world, the optimal live weight of chickens varies. Nowadays, according to data of manufacturers, Cobb 500, depending on the age and country, has a live weight from 1.70 kg (33 days old, Germany) to 2.92 kg (51 day old, Japan), with a meat yield above 70% (5). Glamoclija et al. (1) found that average live weight of Cobb broilers in Serbia ranged from 1.95 kg (55 days old) to 2.59 kg (50 days old). In comparison, Ross 308 broilers, 42 days old, have an average live weight 2.98 kg for male and 2.56 kg for female, while Hubbard Classic 2.75 kg (6, 7, 8). Similarly to the live weight, the average cold carcass weight was the same for Ross and Hubbard provenances (1.50 kg) and significantly lower ( $p < 0.01$ ) compared to Cobb provenance (1.69 kg).

The average breast weight was significantly higher ( $p < 0.01$ ) for Cobb provenance (607.63 g) compared to Ross (504.10 g) and Hubbard (480.37 g) provenances. Proportion of breast in cold carcass weight significantly differed ( $p < 0.01$ ) among all three compared groups and was from 31.83% (Hubbard) to 35.69% (Cobb). Thigh with

drumstick weight was the lowest in Ross provenance (460.04 g) and the highest in Hubbard provenance (480.63 g), but among examined groups were not found significant differences. Proportion of thigh with drumsticks in cold carcass weight was the lowest in Cobb provenance (28.24%) and the highest in Hubbard provenance (32.03%) and among all three examined groups were found significant differences.

Representation of certain body parts is influenced by genetics, diet, age and gender of broiler as well as housing conditions [9]. It is considered that the proportion of valuable parts (breast and thigh with drumstick) in relation to the less valuable parts decreases with the age of broilers [10]. Glamoclija et al. [1] found that cold carcass weight, breast and thighs with drumsticks weight and proportion of breast and thighs with drumsticks in the cold carcass weight were affected by age and breeding of Cobb broilers. Meatiness of carcass provenance of Ross 308, Cobb 500, Cobb 800, Arbor Acres and Hubbard has been studied by many authors [11], [12], [13]. Ristic [12] showed that genotype had significant effect on all parts of carcass. Ross 308 broiler chickens had the highest content of meat (24.5%), followed by Cobb 800 chickens (23.6%) then Cobb 500 (22.3%). Souza et al. [11] evaluated the carcass characteristics of four commercial lines of broiler: Arbor Acres, Hubbard, Cobb and Ross with identical diet conditions and found higher proportion of thigh with drumstick in Hubbard and greater proportion of breast in Ross broilers. In our study the highest proportion of breast was found in Cobb, while the lowest was in Hubbard. The opposite was determined with proportion of thigh with drumstick, where the highest was in Hubbard and the lowest in Cobb broilers. In addition, in our study Ross broilers had lower proportion of breast and higher proportion of thigh with drumstick compared to Cobb broilers. Poultry companies generally select the broiler strain, sex, and age at market that maximizes their profitability. Variation in specialty poultry products means that some processors are deboning broilers that have an average live weight in excess of 1 kg more than broilers processed for the “fast-food” market [3]. McNally and Spicknall [14] were among the first researchers to investigate carcass yields as an estimate of trends and relationships among different commercial poultry markets. Brake et al. [15] conducted regression

analyses to describe the relationship between body weight and yield of edible broiler parts. These latter authors concluded that their study provided baseline information for the general pattern of yield in modern broilers.

#### IV. CONCLUSION

Beside genetic, age, diet and breeding have significant impact on carcass quality parameters in broilers. Broilers of Cobb provenance had significantly higher live weight as well as cold carcass weight compared to broilers of Ross and Hubbard provenances. Also Cobb broilers had the highest proportion of breast while Hubbard broilers had the highest proportion of thigh with drumsticks.

#### ACKNOWLEDGEMENTS

This paper was supported by Ministry of Education, Science and Technological development, Republic of Serbia, Project “Selected biological hazards to the safety / quality of food of animal origin and the control measures from farm to consumer” (31034).

#### REFERENCES

1. Glamoclija, N., Dokmanovic, M., Mirilovic, M., Markovic, R., Baltic, M. Z. (2012). Assessment of Cobb broiler carcass meatiness from different manufacturers. International conference "Biological Food Safety & Quality", 4 - 5 october, Belgrade, Serbia, 159-162.
2. Anonym, 2012a  
[www.cobbvantress.com/Products/ProductProfile/Cobb\\_50](http://www.cobbvantress.com/Products/ProductProfile/Cobb_50)
3. Young, L. L., Northcutt, J. K., Buhr, R. J., Lyon, C. E., Ware, G. O. (2001). Effects of Age, Sex, and Duration of Postmortem Aging on Percentage Yield of Parts from Broiler Chicken Carcasses. Poultry Science 80:376–379.
4. Ristić, M. (2007). Hemijski sastav mesa brojlera u zavisnosti od porekla i godine proizvodnje. Tehnologija mesa 48: 5-6, 203-207.
5. Anonym. (2012 a).  
[www.cobbvantress.com/Products/ProductProfile/Cobb\\_50](http://www.cobbvantress.com/Products/ProductProfile/Cobb_50)
6. Anonym. (2012b).  
[http://en.aviagen.com/assets/Tech\\_Center/Ross\\_Broiler/Ross308BroilerPerfObj2012R1.pdf](http://en.aviagen.com/assets/Tech_Center/Ross_Broiler/Ross308BroilerPerfObj2012R1.pdf)
7. Anonym. (2012c).  
<http://www.hubbardbreeders.com/products.php?id=7>

8. Anonym. (2012d). <http://www.beijingaa.com/download/1147747801.pdf>
9. Bilgili, S. F. (2002). Poultry meat processing and marketing – what does the future hold? *Poultry international* 10: 41, 12-22.
10. Castellini, C., Mugnai, C., Dal Bosco A. (2002). Effect of organic production system on broiler carcass and meat quality. *Meat Science* 60: 219-225.
11. Souza, P. A., Souza, H. B. A., Campo, E. F., Brognoni D. (1995). Desempeno y características de carcasa de diferentes líneas comerciales de pollos parrilleros. XIV Congreso Latinoamericano de Avicultura. Chile, 108-118.
12. Ristić, M. (2005). Influence of breed weight class on the carcass value of broilers. XII<sup>th</sup> European Symposium on the Quality of Poultry Meat, Doorwerth, The Netherlands, 23-26 May.
13. Santos, A. L., Sakomura, E. R., Freitas E. R., Barbosa N. A. A, Mendonca, M. O., Carrilho, E. N. V. M. (2004). Carcass yield and meat quality of three strains of broiler chicken. XII World Poultry Congress, WPSA Turkish Branch, Jun 8-13, Istanbul, Turkey.
14. McNally, E. H., Spicknall, N. H. (1949). Meat yield from live, dressed, and eviscerated Rhode Island Red males of broiler, fryer, and light roaster weights. *Poultry Science* 28:562–567.
15. Brake, J., Havenstein, G. B., Scheideler, S. E., Ferket, P. R. Rives, D. V. (1993). Relationship of sex, age, and body weight to broiler carcass yield and offal production. *Poultry Science* 72:1137–1145.

CIP - Каталогизација у публикацији  
Народна библиотека Србије, Београд

637.5(082)

614.31:637.5(082)

664.9(082)

INTERNATIONAL Meat Industry Conference  
Meat and Meat Products - Perspectives of  
Sustainable Production (57 ; 2013 ; Beograd)  
Proceedings [Elektronski izvor] /  
International 57th Meat Industry Conference  
Meat and Meat Products - Perspectives of  
Sustainable Production, Belgrade, 10th-12th  
June, 2013 ; [organizer] Institute of Meat  
Hygiene and Technology, Belgrade ; [editors  
in chief Slobodan Lilić, Vesna Đorđević]. -  
Belgrade : Institute of Meat Hygiene and  
Technology, 2013 (Belgrade : Institute of  
Meat Hygiene and Technology). - 1 elektronski  
optički disk (CD-ROM) ; 12 cm

Sistemski zahtevi: Nisu navedeni. - Nasl. sa  
naslovnog ekrana. - Tiraž 200. -  
Bibliografija uz svaki rad.

ISBN 978-86-82547-07-5

1. Institute of Meat Hygiene and Technology  
(Beograd)

a) Месо - Зборници b) Месне прерађевине -  
Зборници

COBISS.SR-ID 198874636