FOLIA VETERINARIA

The scientific journal of the
UNIVERSITY OF VETERINARY MEDICINE AND
PHARMACY IN KOŠICE — The Slovak Republic

ISSN 0015-5748

Supplementum 1

LVII • 2013

FOLIA VETERINARIA is issued by the *University of Veterinary Medicine and Pharmacy in Košice (UVMP);* address: Komenského 73, 041 81 Košice, The Slovak Republic (tel.: +421 55 632 52 93, fax: +421 55 632 52 93, E-mail: Milada.Vargova@uvlf.sk).

The journal is published quarterly in English (numbers 1—4) and distributed worldwide.

Subscription rate for 1 year is 120 €. Orders are accepted by *The Department of The Scientific Information — The Library of The University of Veterinary Medicine and Pharmacy in Košice* (UVIK), E-mail: Natalia.Palencarova@uvlf.sk; the subscription is accepted by the State treasure.

Bank contact: State treasure, Radlinského 32, Bratislava 15, The Slovak Republic; **account number:** 7000072225/8180.

FOLIA VETERINARIA, vydáva *Univerzita veterinárskeho lekárstva a farmácie v Košiciach (UVLF),* Komenského 73, 041 81 Košice, Slovenská republika (tel.: 055/632 52 93, fax: 055/632 52 93, E-mail: Milada.Vargova@uvlf.sk).

Časopis vychádza kvartálne (č. 1—4) a je distribuovaný celosvetove.

Ročné predplatné 120 €. Objednávky prijíma *Ústav vedeckých informácií a knižnice Univerzity veterinárskeho lekárstva a farmácie v Košiciach* (UVIK), E-mail: Natalia.Palencarova@uvlf.sk; predplatné Štátna pokladnica (na nižšie uvedené číslo účtu).

Bankové spojenie: Štátna pokladnica, Radlinského 32, Bratislava 15; **číslo účtu:** 7000072225/8180.

Tlač: **Univerzita veterinárskeho lekárstva a farmácie** Komenského 73, 041 81 Košice

Sadzba: **Sapfo publishers**, Szakkayho 1, 040 01 Košice

EV 3485/09

For basic information about the journal see Internet home pages: www.uvm.sk; www.uvlf.sk

Indexed and abstracted in AGRIS, CAB, EBSCO

FOLIA VETERINARIA

PUBLISHED BY
THE UNIVERSITY OF VETERINARY MEDICINE AND PHARMACY IN KOŠICE
THE SLOVAK REPUBLIC

Folia veterinaria Supplementum 1
Vol. 57, 2013

VYDÁVA
UNIVERZITA VETERINÁRSKEHO LEKÁRSTVA A FARMÁCIE V KOŠICIACH
2013

UNIVERSITY OF VETERINARY MEDICINE AND PHARMACY IN KOŠICE
DEPARTMENT OF FOOD HYGIENE AND TECHNOLOGY
STATE VETERINARY AND FOOD ADMINISTRATION OF THE SLOVAK REPUBLIC

HYGIENA ALIMENTORUM XXXIV

Safety and Quality of Milk and Milk Products

INTERNATIONAL SCIENTIFIC CONFERENCE
May 8—10, 2013
Štrbské Pleso, The High tatras
The Slovak Republic

ABSTRACTS
of lectures and posters

The abstracts published had not undergone English language correction

ORGANIZERS

University of Veterinary Medicine and Pharmacy in Košice

Department of Milk Hygiene and Technology

Ministry of Agriculture of the Slovak Republic, Bratislava

State Veterinary and Food Administration of the Slovak Republic, Bratislava

Slovak Dairy Association, Bratislava

ORGANIZING COMMITTEE

Pavel Maľa, Assoc. Prof. DVM. PhD. — chairperson
University of Veterinary Medicine and Pharmacy in Košice, SR

Emil Pilipčinec, Prof. DVM. PhD.
University of Veterinary Medicine and Pharmacy in Košice, SR

Jozef Bíreš, Prof. DVM. PhD.
State Veterinary and Food Administration of the Slovak Republic, Bratislava

Zuzana Nouzovská, Ing.
Ministry of Agriculture and Rural Development of the Slovak Republic, Bratislava

Keresteš Ján, Ing.
NIKA, s.r.o., SR

Peter Turek, Prof. DVM. PhD.
University of Veterinary Medicine and Pharmacy in Košice, SR

Eva Dudriková, Assoc. Prof. DVM. PhD.
University of Veterinary Medicine and Pharmacy in Košice, SR

Mária Baranová, Assoc. Prof. RNDr. PhD.
University of Veterinary Medicine and Pharmacy in Košice, SR

Lenka Vorlová, Prof. DVM. PhD.
University of Veterinary Medicine and Pharmacy in Brno, the Czech Republic

Jan Wisniewski, DVM.
Warsaw University of Life Sciences, Faculty of Veterinary Medicine, Poland

FOLIA VETERINARIA, 57, Supplementum 1, 2013

CONTENTS

FOLIA VETERINARIA, 57, SUPPLEMENTUM 1: 11, 2013

THE ROLE AND POSITION OF THE UNIVERSITY OF VETERINARY MEDICINE AND PHARMACY IN KOŠICE IN EDUCATION, SCIENTIFIC RESEARCH AND INTERNATIONAL COOPERATION

Pilipčinec, E.

University of Veterinary Medicine and Pharmacy in Košice
The Slovak Republic

pilipcin@uvm.sk

ABSTRACT

The University of Veterinary Medicine and Pharmacy in Košice is a one faculty university providing higher education in accredited study programmes of all three levels of higher education. It is the only institution in the Slovak Republic offering higher education in the veterinary field. The main mission of the University is to provide higher undergraduate and postgraduate veterinary education on the basis of creative scientific research in the field of veterinary science and pharmacy.

Higher education of the 1st level is provided in the study programmes Cynologist and Safety of food and feed. Higher education of the 2nd level has been provided in doctor study programmes General veterinary medicine and Food hygiene and since the academic year 2006/2007 also in master study programme Pharmacy.

University of Veterinary Medicine and Pharmacy in Košice has been providing the veterinary education in English for 20 years.

On the basis of results of evaluation of approximation of education in the field of veterinary medicine between the Slovak Republic and EU, carried out by Commission EU-TAIEX in 2002, a document issued by the Commission stated that the University of Veterinary Medicine in Košice complies with the EU standards and Diplomas issued by the University of Veterinary Medicine and Pharmacy in Košice are accepted in EU countries.

Key words: higher undergraduate and postgraduate veterinary education; University of Veterinary Medicine and Pharmacy in Košice

FOLIA VETERINARIA, 57, SUPPLEMENTUM 1: 12, 2013

SAFETY AND QUALITY OF MILK AND MILK PRODUCTS IN SLOVAKIA

Bíreš, J.

State Veterinary and Food Administration of the Slovak Republic, Bratislava The Slovak Republic

bires@svssr.sk

ABSTRACT

The veterinary administration authorities perform official/veterinary inspection of the products of animal origin, including milk and milk products, in all stages of the food chain, i.e. from primary production up to a retail trade. The main aim of official inspection of the products of animal origin is the verification of the compliance with the legislative rules in this field. In the year 2012, totally 2773 samples of milk and milk products were examined within the official control. Totally 69 samples (2.49 %) were non-compliant, this was an improvement by 0.33 % in comparison to the year 2011. Out of the total number of 2773 samples, 414 samples of raw milk and milk products produced with a raw milk were examined. Totally 28 samples (6.76 %) were non-compliant, this was an improvement by 1.23 % in comparison to the year 2011. Of the examined 2359 samples of heat-treated milk and milk products produced from heat treated milk, totally 41 samples (1.74 %) were non-compliant, this was an improvement by 0.14 % in comparison to the year 2011.

Key words: safety and quality of milk

ACTIVITY OF THE SLOVAK NATIONAL FOCAL POINT FOR SCIENTIFIC AND TECHNICAL COOPERATION WITH EFSA

Bírošová, Z., Kalánová, T.

Ministry of Agriculture and Rural Development of the Slovak Republic, Bratislava The Slovak Republic

zuzana.birosova@land.gov.sk

ABSTRACT

The general EU food law regulation (EC) No. 178/2002 of the European Parliament and of the Council appointed European Food Safety Authority (EFSA) as the competent authority for scientific risk assessment and risk communication on the EU level. To accomplish its mission, EFSA cooperates closely with the EU Member States (MSs). One type of cooperation with MSs is a national Focal point network. The principal activities are focused on the exchange of scientific information (risk assessment outputs) between national authorities and EFSA. Results of activities related to milk and milk products with regard to human health are described in the paper.

Key words: European Food Safety Authority (EFSA); food law of EU

FOLIA VETERINARIA, 57, SUPPLEMENTUM 1: 13, 2013

QUALITY AND SECURITY OF RAW MATERIALS AND FINISHED PRODUCTS FROM THE PERSPECTIVE OF THE PRODUCER

Šusterová, M.

Bryndziareň a syráreň, s.r.o., Zvolenská Slatina
The Slovak Republic

susterova@bryndziaren.sk

ABSTRACT

Quality and safety is the most important task of the workers of the enterprise and, therefore, workers must have a comprehensive overview of the legislation and of the laboratory analyses related to the quality of the food. In order to ensure the production of high-quality food it is essential to ensure thorough inspection of all starting materials and of the entire production process so that the relevant principles within the area of chemical, biological, technological and economic factors of food production are observed.

Key words: chemical, biological, technological and economic factors of food production; food quality; laboratory analysis

THE CURRENT CONTENT OF IMPORTANT NUTRIENTS IN MILK

Vorlová, L., Borkovcová, I., Králová, M. Kostrhounová, R., Hodulová, L.

University of Veterinary and Pharmaceutical Sciences Brno
Department of Hygiene and Technology of Milk
The Czech Republic

vorloval@vfu.cz

ABSTRACT

In terms of human nutrition 20 minerals are considered to be essential. Considering their character and effects on the human organism they are called inorganic substrates (Na, K, Cl, Ca, Mg, P) and inorganic biocatalysers (Se, Cr, Zn, I, Cr, Mn, Fe, Mo, Ni, Si, B, As). It is important to note that milk is the source of all of them and an important source of especially calcium, phosphorus, magnesium, potassium and zinc.

Pilot studies of pool milk samples and samples from milking-machines proved that the content of iodine varies and ranges from 60 to 159 $\mu g.l^{-1}$. Continuing studies in this field are therefore relevant.

Key words: calcium; iodine; magnesium; milk; minerals; phosphorus; potassium; zinc

ACKNOWLEDGEMENT

The paper is part of the project NAZV KUS QJ1230044.

FOLIA VETERINARIA, 57, SUPPLEMENTUM 1: 14, 2013

CURRENT APPROACH TO THE ANALYTICAL METODOLOGY OF IMPORTANT MILK COMPONENTS

Borkovcová, I., Kostrhounová, R. Hodulová, L., Vorlová, L.

University of Veterinary and Pharmaceutical Sciences Brno Department of Hygiene and Technology of Milk The Czech Republic

borkovcovai@vfu.cz

ABSTRACT

Current analytical methods for milk analysis should fulfil requirements for modern bio-analytical methods, i. e. increased speed, higher separation efficiency and resolution, higher sensitivity and much lower solvent consumption comparing with conventional methods. Particularly liquid chromatography is the method of choice in analysis of milk components. There are two often used approaches in fast liquid chromatographic analysis, an ultra high performance/pressure liquid chromatography (UHPLC) using sub-2-μm particles or conventional HPLC with fused core particles.

There is a great contrast between fast chromatographic analysis and conventional sample preparation. Conventional sample preparation technique is fundamental and critical step in bio-analytical methods. To remove this disadvantage, the pressurized liquid extraction for lipophilic compounds and solid phase extraction under positive pressure (PLE) and QuEChERS technique for isolation of hydrophilic components are used.

Key words: milk analysis; positive pressure PLE; QuEChERS; SPE; UHPLC

ACKNOWLEDGEMENT

The paper is part of the project NAZV KUS QJ1230044.

QUALITY OF MILK AND FATTY ACIDS IN MILK FAT OF DAIRY COWS ON PASTURE

Kirchnerová, K., Foltys, V., Špička, J.

Animal Production Research Centre in Nitra The Slovak Republic

kirchnerova@cvzv.sk

ABSTRACT

The aim of the paper was to extend the knowledge about correlation of current fatty acids (FAs) profile of cow milk fat in herds of cows (n = 134) on summer pasture in mountainous area in Slovakia with milk production and quality parameters. The FAs composition of individual milk was determined by GC-MS and 54 FAs were identified. In the first third of lactation saturated fatty acids (SAFA) (70.48 ± 4.04 % in the milk fat) showed highly significant positive correlation ($r > 0.45$; $P < 0.01$) with all indicators of milk production (days, the total amount of milk fat and protein in kg). There was a significant indirect relationship between monounsaturated fatty acids (MUFA) (26.26 ± 3.59 %) and the total milk production. Their content decreased with the rise of the total amount (kg) of produced fat ($r = -0.426$), protein ($r = -0.494$), milk ($r = -0.514$), and with the increasing number of the days of lactation ($r = -0.583$, $P < 0.001$). Polyunsaturated fatty acids (PUFA) (3.26 ± 0.069 %) showed negative correlation with the total amount of produced milk, fat, protein (kg) and the number of days in lactation with coefficients ranging from $r = -0.468$ to $r = -0.485$ ($P < 0.01$). Grazing of dairy cows on mountain farms ensured better composition of milk fat from the health point of view but lowered the production.

Key words: fatty acids; grazing; lactation; milk

ACKNOWLEDGEMENT

The paper is part of the projects APVV-0153-07 and CEGEZ No. 26220120042.

FOLIA VETERINARIA, 57, SUPPLEMENTUM 1: 15, 2013

MILK AS A SOURCE OF CERTAIN B-GROUP VITAMINS

Hodulová, L., Kostrhounová, R. Borkovcová, I., Vorlová, L.

University of Veterinary and Pharmaceutical Sciences Brno, Department of Hygiene and Technology of Milk The Czech Republic

H11012@vfu.cz

ABSTRACT

Milk is a unique animal product secreted by mammary gland during the lactation, with high content of naturally occurring biological active substances that exert various important roles in metabolism. The feeding strategy and food production change with time. Milk is very good source of riboflavin but only low source of folates. The worldwide strategy for attaining safe levels of folates for overall nutritional status is their intake from natural food sources. The objective of this study was to determine the hydrophilic vitamin riboflavin and 5-methyl-tetrahydrofolate and tetrahydrofolate, which occur in milk, employing HPLC analytical separation method with fluorescence detection. Sample extraction for folates is based on enzymatic hydrolysis after heat extraction from proteins and the principal step for riboflavin is acidic hydrolysis. The mean content of riboflavin in raw cow's milk samples obtained from different dairy farms in the Czech Republic from May to December 2012 was 0.99 mg.l^{-1} for riboflavin. The data were obtained by the HPLC method with FLD detection.

Key words: folates**;** HPLC; milk; riboflavin

ACKNOWLEDGEMENT

The paper is part of project NAZV KUS QJ1230044.

REPRESENTATION OF SELECTED LIPOPHILIC VITAMINS IN RAW AND HEAT-PROCESSED MILK

Kostrhounová, R., Hodulová, L. Borkovcová, I., Vorlová, L.

University of Veterinary and Pharmaceutical Sciences Brno, Department of Hygiene and Technology of Milk The Czech Republic

kostrhounovar@vfu.cz

ABSTRACT

The aim of our study was to evaluate the total content of fat soluble vitamins retinol and tocopherol in raw and heat-processed milk. The samples were prepared by alkaline saponification followed by liquid-liquid extraction into a non-polar solvent. UHPLC method with UV and FLD detection was used as an analytical ending.

The retinol ranged from 1.89 to 1.98 mg.l^{-1} in raw milk and 0.68 mg.l^{-1} in heat-processed milk. The tocopherol content was 1.98—2.82 mg.l^{-1} in raw and 0.44 mg.l^{-1} in heat-processed milk.

Key words: milk; retinol; tocopherol; UHPLC

ACKNOWLEDGEMENT

The paper is part of the project NAZV KUS No. QJ1230044.

FOLIA VETERINARIA, 57, SUPPLEMENTUM 1: 16, 2013

DAIRY PRODUCTS — THE WHITE GOLD JEWELRY

Škuntová, O., Cabanová, L.

State Veterinary and Food Institute in Dolný Kubín
The Slovak Republic

cabanova@ svpudk.sk

ABSTRACT

All food business operators know very well that without good raw material there is not possible to produce safe food products. At the present time the consumer is more and more interested in foodstuff he buys and eats and reads the labels where all the compounds are written. And the products overflowing with "E food additives" and other untypical components are not chosen when doing the shopping. Only from gold of the best quality the incomparably beautiful jewels can be made. And only from milk of the best quality good and safe dairy products can be obtained.

Key words: control; dairy products; quality; safety

IMPACT OF HYGIENE INDICATORS ON TECHNOLOGICAL PARAMETERS IN THE STEAMED CHEESE PRODUCTION

Luptáková, O., Juhaščíková, N.

District Veterinary and Food Administration, Zvolen
The Slovak Republic

Riaditel.ZV@svps.sk, HygienaPotravin.ZV@svps.sk

ABSTRACT

Sheep milk is a valuable natural product for human consumption, but because of milk composition it becomes an ideal environment for many micro-organisms. For their successful elimination from the raw milk, environment during primary production and processing is important together with knowledge of their potential spreading the place of origin of contamination and ways of their successful reduction. From the hygiene point of view, *Staphylococcus aureus* microflora is a natural component of raw sheep milk. Due to its enterotoxic properties it is a potential pathogen and with regard to food safety it is necessary to have it under control.

Key words: active acidity; coagulase positive staphylococci; sheep milk

FOLIA VETERINARIA, 57, SUPPLEMENTUM 1: 17, 2013

THE USE OF FT NIR SPECTROSCOPY FOR QUALITY CONTROL OF MILK PRODUCTS

Šustová, K.[1], Lužová, T.[1], Kozelková, M.[1], Mlček, J.[2]

[1]Mendel University in Brno, Department of Food Technology
[2]Tomas Bata University in Zlín, Department of Food Technology and Microbiology
The Czech Republic

sustova@mendelu.cz; mlcek@ft.utb.cz

ABSTRACT

NIR spectroscopy finds the application in the dairy technology and control of final dairy products. It is a quick and non-destructive method. There are many methods that can be used to analyse the components and physical properties or detect adulteration of dairy food. Their disadvantage is the slow sample preparation and analysis itself. NIR spectroscopy is a practical method particularly attractive for its speed. It can also be used for a quick check-up on the addition of non-declared ingredients (e. g. vegetable fat, vegetable protein), dilution of milk by adding water, addition of colostrum, melamine, finding residues of antibiotics, adulteration of goat's milk to cow's milk. The FT NIR spectroscopy can distinguish between different methods of heat treatment of milk. The method of near-infrared spectroscopy can be an important tool for determining the originality of dairy products and controlling the adulteration and thus for consumer protection.

Key words: adulteration; dairy product; milk; near-infrared spectroscopy; quality of milk products

ACKNOWLEDGEMENT

The paper is part of the project NAZV KUS QJ1230044.

FALSIFICATION OF "SLOVENSKÁ BRYNDZA" CHEESE — METHODS OF ANALYSIS

Šlezárová, A.[1], Beňová, E.[1], Zaják, P.[1], Židek, R.[2] Sládečková, J.[1], Šugová, D.[1], Germuška, R.[3]

[1]State Veterinary and Food Institute in Bratislava
[2]Slovak University of Agriculture in Nitra, Faculty of Biotechnology and Food Sciences in Nitra, Department of Food Hygiene and Safety
[3]State Veterinary and Food Institute in Dolný Kubín
The Slovak Republic

aslezarova@svuba.sk

ABSTRACT

"Slovenská bryndza" is a traditional Slovak cheese manufactured by milling a lump of matured sheep cheese or milling a mixture of lump sheep cheese and lump cow cheese. The percentage of lump sheep cheese is greater than 50 %. There are two methods for detection of cow's milk in "Slovenská bryndza" cheese. The first method is based on isoelectric focusing of γ-caseins after plasminolysis. The second one is based on isolation of para-κ-caseins and their detection by high-performance liquid chromatography (HPLC).

Key words: γ-cazein, para-κ-cazein; HPLC; isoelectric focusing, Slovenská bryndza

FOLIA VETERINARIA, 57, SUPPLEMENTUM 1: 18, 2013

THE EFFECT OF TERNARY MIXTURES OF EMULSIFYING SALTS ON HARDNESS OF MODEL PROCESSED CHEESE IN DEPENDENCE ON CHEESE MATURITY

Buňka, F.[1], Buňková, L.[2], Kuchař, D.[3], Pachlová, V.[1]

[1]Tomas Bata University in Zlín, Department of Food technology
[2]Tomas Bata University in Zlín, Faculty of Technology
Department of Environmental Protection Engineering
[3]Fosfa, Břeclav
The Czech Republic

bunka@ft.utb.cz

ABSTRACT

The aim of this study was to describe the dependence of hardness of model processed cheeses on the composition of ternary mixtures of phosphate emulsifying salts. The trends of dependence of the above-mentioned texture parameters on the composition of emulsifying salts were studied in model samples made of cheese differing in maturity (2, 4 and 8 weeks) within a 30-day storage period at 6 °C.

Key words: adhesiveness; cohesiveness; emulsifying salts; hardness; phosphates; processed cheese; ternary mixture

ACKNOWLEDGEMENT

The paper is part of the projects IGA/FT/2013/010 and QJ121030.

FUNCTIONAL FOODS AND NOVEL FOODS

Tremlová, B., Randulová, Z.

Department of Vegetable Foodstuff, Faculty
of Veterinary Hygiene and Ecology
University of Veterinary and Pharmaceutical Sciences Brno
The Czech Republic

tremlovab@vfu.cz

ABSTRACT

Functional foods are produced from naturally occurring ingredients, so that besides their nutritional value they have additional health promoting effects, particularly as immunity enhancers, in the disease prevention, with beneficial effects on physical and mental health and slowing down the aging processes. However, up to this date there is no official definition, rules or conditions for their production in the Czech Republic or the EU. But there are many rules, although not directly mentioning the term "functional food", closely related with food of this kind, especially labeling regulations, because each "functional food" has one or more health claims on the packaging. Producers of functional foods search for new substances, often for those kinds that were not previously commonly consumed within the European Community, hence their usage, especially with regard to their safety, is essential.

Key words: health claims; novel food safety

FOLIA VETERINARIA, 57, SUPPLEMENTUM 1: 19, 2013

MICROSCOPICAL CHARACTERIZATION OF AMARANTH FLOURS

Pospiech, M., Bartlova, M., Tremlová, B., Jandásek, J. Talandová, M., Eliášová, M., Čáslavková, P.

Department of Vegetable Foodstuff
Faculty of Veterinary Hygiene and Ecology
University of Veterinary and Pharmaceutical Sciences Brno
The Czech Republic

mpospiech@vfu.cz

ABSTRACT

Amaranth, a plant coming originally from the American continent, is called the crop of the future. Amaranth can be classified as a pseudocereal. On retail market there are three types of amaranth flour. The types of amaranth flour are sorted to 250, 50, 10 μm depending on processing by milling. The results show that the declared sizes of perisperms are significantly different, with declared size given to producers. Significant differences were observed also between the two methods used.

Key words: amaranth; ImageJ; microscopic characterization of amaranth flour

CHARACTERISATION OF SOME DAIRY STARTERS ISOLATED FROM TRADITIONAL SLOVAK MILK SPECIALITIES

Slottová, A., Greifová, M., Lauková, A., Kmeť, V. Drončovský, M., Strompfová, V., Kološta, M., Tomáška, M.

Dairy Research Institute in Žilina
Institute of Animal Physiology SAS Košice
The Slovak Republic

kolosta@vumza.sk

ABSTRACT

"Wild" strains previously isolated from traditional Slovak sheep and goat specialities, such as *Lbc. plantarum, paracasei, fermentum, brevis, paraplantarum, L. lactis, E. faecalis, faecium, durans* and *hirae*, were characterised for resistance to antibiotics, production of organic acids, biogenic amines, diacetyl, CO_2, H_2O_2, antimicrobial substances, haemolysis, proteolytic activity and ability to grow under different concentration of NaCl and at various temperatures. The goal of these experiments was to select suitable starters for production of fermented milks and cheeses from pasteurised milk. The most suitable criteria for further selection were: sensitivity to antibiotics, limited production of biogenic amines, antimicrobial properties and production of sensory active compounds.

Key words: biogenic amines; *E. faecalis*; *L. lactis; Lbc. paracasei plantarum, fermentum, brevis;* resistance to antibiotics, sensory active compounds

ACKNOWLEDGEMENT

The paper is part of the project ITMS 26220220065.

FOLIA VETERINARIA, 57, SUPPLEMENTUM 1: 20, 2013

THE CONTENT OF LACTIC ACID BACTERIA IN YOGHURTS FROM A FOOD CHAIN

Lopašovská, J., Koreňová, J.

Food Research Institute in Bratislava
The Slovak Republic

lopasovska@vup.sk

ABSTRACT

Yoghurt is one of the most wide-spread fermented products containing thermophilic lactic acid bacteria. Fermentation induced by lactic acid bacteria is the base process of manufacturing sour dairy products. This process causes characteristic biochemical changes, such as lower pH, precipitation of milk proteins, and a production of flavouring substances. It also has positive nutritional and dietary effects on overall health of an individual if consumed in sufficient amounts. The study focused on finding a characteristic number of yoghurt cultures from a Slovak food chain. The yoghurts were bought within the consumption period, 7 to 27 days before expiration. The research investigated yoghurts with fat content of 0.1 % up to 10 % of weight. The results are the numbers of yoghurt cultures that were evaluated in accordance with the Codex Alimentarius of the Slovak Republic.

Key words: *Lactobacillus bulgaricus; Streptococcus thermophilus*; yoghurt

QUANTITATIVE ASSESSMENT OF *STAPHYLOCOCCUS AUREUS* BEHAVIOUR IN LUMP CHEESES: KNOWLEDGE LEADING TO THE MICROBIAL RISK ASSESSMENT

Valík, Ľ., Medveďová, A., Liptáková, D.

Faculty of Chemical and Food Technology
Slovak University of Technology in Bratislava
The Slovak Republic

lubomir.valik@stuba.sk

ABSTRACT

Foods can be contaminated by *Staphylococcus aureus* usually as a result of unhygienic behaviour of staff or improper technological procedures. The epidemiological potential of such contamination lies in food poisoning outbreaks, which according to the official reports occur at a rate 0.2 per 100,000 population in Slovakia (the EU average is 0.6/100,000). Although it does not possess significant competitive properties, it can generally multiply to densities higher than 10^6 CFU.g^{-1}, which may lead to production of heat-resistant enterotoxins. *S. aureus* is almost ubiquitous in ewes' milk. It is likely that its numbers can increase by more than 3 log CFU.g^{-1} and exceed the densities from 10^5—10^6 CFU.g^{-1} in the milk for a short period, particularly under farm conditions. It is unlikely that it can succeed in competition with the active lactic acid bacteria when they are present in higher numbers in ewes' milk. While exposure of *S. aureus* through the consumption of lump ewes' cheese made from raw milk is high, its consequences are mild and severity may be assessed as negligible. Based on this, the overall risk is considered as low.

Key words: ewes' cheese; ewes' milk; microbial risk assessment; *Staphylococcus aureus*

ACKNOWLEDGEMENT

The paper is part of the project APVV-0590-10.

FOLIA VETERINARIA, 57, SUPPLEMENTUM 1: 21, 2013

STRAINS OF *ENTEROCOCCUS DURANS* ISOLATED FROM SHEEP LUMP CHEESE AND THEIR BACTERIOCIN-LIKE ACTIVITY

Lauková, A.[1], Strompfová, V.[1], Szabóová, R.[1] Kmeť, V.[1], Tomáška, M.[2]

[1]Institute of Animal Physiology SAS in Košice
[2]Dairy Research Institute in Žilina
The Slovak Republic

laukova@saske.sk

ABSTRACT

Enterococcus durans is a species belonging to the Firmicutes, family Enterococcacae, genus Enterococcus. In the dairy industry, *E. durans* strains play an important role in the ripening of some types of cheeses. From among 59 colonies isolated from 38 samples of sheep lump cheese from 34 agrofarms in central Slovakia, 7 colonies were *E. durans,* identified by the Maldi-Tof identification system. By comparing their identification value score, a dendrogram was obtained showing similarity of 3 strains. Therefore only 4 strains 7E9, 20E1, 26E7, 25E6 were subjected to additional tests. The strains did not produce haemolysis and were gelatinase-negative. Gene for Ent P was detected in 3 of the 4 strains. *E. durans* 20E1 possessed gene for Ent B. Due to 7E9 and 26E7 the growth of 7 or 5 indicators of 14 was inhibited. The partially-purified substances produced by 7E9 and 26E7 strains reached activity of 25 600 and 6 400 AU.ml^{-1}, respectively, with 3 months stability. These 2 strains seemed to be good candidates for the use as food adjuncts.

Key words: bacteriocin-like activity; *Enterococcus durans*; sheep lump cheese

BACTERIOCIN-LIKE ACTIVE STRAIN *LACTOBACILLUS PLANTARUM* 17L/1, ISOLATED FROM STORED SHEEP CHEESE

Lauková, A.[1], Szabóová, R.[1], Strompfová, V.[1], Kmeť, V.[1] Tomáška, M.[2], Greifová, M.[3], Greif, G.[3]

[1]Institute of Animal Physiology SAS in Košice
[2] Research Institute of Dairy in Žilina
[3]Faculty of Chemical and Food Technology
Slovak University of Technology in Bratislava
The Slovak Republic

laukova@saske.sk

ABSTRACT

From among 65 colonies isolated from 47 samples of sheep lump cheeses, stored sheep cheeses or sheep acidified milk, supplied by 34 different agrofarms and/or dairy plants in central Slovakia, 10 strains belonged to the genus *Lactobacillu*s and 11 to the genus *Lactococcus,* according to the Maldi-Tof identification system. Three species were lactobacilli: *Lactobacillus plantarum, L. paracasei, L. brevis*. Lactococci were represented by *Lactococcus lactis*. The qualitative bacteriocin test showed that only *Lactobacillus plantarum* 17L/1 was active. It was therefore subjected to quantitative testing; 17L/1 was active against 16 of 27 strains. The most inhibited indicators were *L. monocytogenes* and/or *S. aureus* (activity 100—3 200 AU.ml^{-1}). The strain 17L/1 tolerated 1 % oxgall-bile; it also tolerated pH 2.5 (for 180 minutes). Surviving of the strain in mice, in faeces 10^3 $\log_{10}$ CFU.g^{-1}, in *jejunum* 10^1 CFU.g^{-1} without loss of experimental mice during 4 weeks supported its safety.

Key words: activity; bacteriocin-like; *Lactobacillus plantarum*; stored sheep cheese

FOLIA VETERINARIA, 57, SUPPLEMENTUM 1: 22, 2013

COMPARISON OF COMMERCIAL TESTS DESIGNED TO DETECT BACTERIA OF THE GENUS *STAPHYLOCOCCUS* AND *STREPTOCOCCUS* IN RAW COW'S MILK

Foltys, V., Vršková, M., Kirchnerová, K., Říha, J.

Animal Production Research Centre in Nitra
The Slovak Republic
Bentleyczech, s.r.o., Praha,
The Czech Republic

jan@bentleyczech.cz

ABSTRACT

In this study we evaluated the diagnostic tests StaphAlert and Overnighter, intended for detection of bacteria of the genus *Staphylococcus* and *Streptococcus* in raw cow's milk. StaphAlert mastitis test was designed to determine the type of bacteria of the genus *Staphylococcus*. Overnighter is a patented technology for identification of the type of bacteria of genera *Staphylococcus* and *Streptococcus*. The commercial tests were tested using 37 individual samples raw cow's milk. Detection of *Staphylococcus* bacteria was confirmed by the reference method in 16 samples. Using the StaphAlert test twelve samples were correctly identified as positive for the presence of bacteria of the genus *Staphylococcus*. This was 75 % success with respect to samples confirmed by the reference method. The ampoules from the kit Overnighter used to determine the presence of bacteria of the genus *Staphylococcus* showed results identical with those of the test StaphAlert. Ampoules for determining the presence of the bacteria *Streptococcus* showed a positive reaction in 28 samples while the reference laboratory test revealed positivity of only one sample. According to our results the selectivity of the medium in the diagnostic kit Overnighter is too low to confirm the presence of bacteria of the genus *Streptococcus*.

Key words: diagnostic tests; mastitis; mastitis pathogens; milk

ACKNOWLEDGEMENT

The paper is part of the project CEGEZ No. 26220120042.

MOLECULAR BIOLOGICAL DETECTION OF *LISTERIA MONOCYTOGENES* IN DAIRY PRODUCTS

Véghová, A., Koreňová, J.

Food Research Institute in Bratislava
The Slovak Republic

veghova@vup.sk

ABSTRACT

*Listeria monocyto*genes is a food-borne pathogen that can cause listeriosis. The mortality rate can be as high as 30 %. The aim of this study was to detect *L. monocytogenes* in dairy products by real-time polymerase chain reaction (real-time PCR) oriented to the *actA* gene, which codes for a protein involved in the actin filament assembly.

Key words: *Listeria monocytogenes*; real-time PCR

FOLIA VETERINARIA, 57, SUPPLEMENTUM 1: 23, 2013

NEITHER ALL *E.COLI* NOR THE METHODS OF THEIR DETERMINATION ARE THE SAME

Cabanová, L., Škuntová, O.

State Veterinary and Food Institute in Dolný Kubín
The Slovak Republic

cabanova@svpudk.sk

ABSTRACT

Verotoxigenic *Escherichia coli* (VTEC) belong to group of *E.coli* that are characterized by production of verotoxins (VT1, 2). Human infections lead to severe bloody diarrhoea, abdominal pains and can result in haemolytic uraemic syndrome (HUS). Consumption of risky food is the major factor in humans (unpasteurized dairy products, raw meat, contaminated vegetables). The gastrointestinal tract of ruminants seems to be the main reservoir for VTEC.

Key words: *Escherichia coli*; VTEC

DETECTION OF MASTITIS BY MEANS OF ELECTRICAL CONDUCTIVITY MEASUREMENT

Tongeľ, P.

Animal Production Research Centre in Nitra
The Slovak Republic

tongel@cvzv.sk

ABSTRACT

Rapid electronic mastitis test (REM test) was developed in our Institute under the project "MLIEKO No. 26220220098", supported by the operational programme "Research and Development", funded from the European Regional Development Fund. Two experiments were performed with the aim to find out whether the REM test is sufficiently precise to help in detection of mastitis. In the first experiment the accuracy of the test was evaluated under laboratory conditions. In the second one we made measurements in a milking parlour. Milk from quarters of 55 cows was evaluated by the REM test. Milk samples were analyzed in milk laboratory for somatic cell count (SCC). The correlation coefficient between MEV and SCC was calculated and it reached $r = 0.65$ ($P < 0.01$). The mean value of electrical conductivity of milk from healthy cows was 4.8 ± 0.4 mS.cm^{-1} and the mean conductivity of milk from sick cows was 6.4 ± 0.9 mS.cm^{-1}. On the basis of the second experiment we concluded that the REM test can be a useful tool for monitoring of mastitis and its prevention under practical conditions.

Key words: dairy cows; mastitis detection; milk electrical conductivity measurement

FOLIA VETERINARIA, 57, SUPPLEMENTUM 1: 24, 2013

DETECTION OF MASTITIS BY MEASUREMENT OF MILK RHEOLOGICAL PROPERTIES

Tongeľ, P.

Animal Production Research Centre in Nitra
The Slovak Republic

tongel@cvzv.sk

ABSTRACT

Somatic cell counter (SCC counter) was developed in our Institute under the project "MLIEKO č. 26220220098", supported by the operational programme "Research and Development", funded from the European Regional Development Fund. Two experiments were performed with the aim to find out whether the SCC counter is precise enough to help at mastitis detection. In the first experiment the accuracy of measurements under laboratory conditions was determined by testing the apparatus with calibration solutions. In the second experiment we made measurements in a milking parlour. Milk from quarters of 55 cows was evaluated by the SCC counter. Milk samples were analyzed in two different accredited milk laboratories for somatic cell count (SCC). The correlation coefficient between $\log_{10}$SCC from SCC counter and mean $\log_{10}$SCC from laboratories was calculated and it was 0.93 ($P < 0.01$). On the basis of the second experiment we can conclude that the SCC counter can be useful for monitoring of mastitis and its prevention under practical conditions.

Key words: dairy cows; measurement of milk viscosity; SCC measurement

BACTERIAL AGENTS OF SHEEP MASTITIS AND THEIR SENSITIVITY TO ANTIBIOTICS

Zigo, F., Vasiľ, M., Elečko, J., Farkašová, Z. Supuka, P., Pavľak, A.

University of Veterinary Medicine and Pharmacy in Košice
The Slovak Republic

zigo.f@azet.sk

ABSTRACT

Our study investigated the incidence of bacterial agents of sheep mastitis on a farm in Eastern Slovakia (mean number of sheep in the herd 440; machine milking). During the milking season, the sheep were subjected to complex examination (clinical, California mastitis test, laboratory diagnostic of milk samples) in three phases, namely in the beginning (May), the middle (July) and at the end of milking (September). The highest incidence of mastitis (46.9 %) was observed in July with similar proportion of bacterial (10.9 %) and subacute (9.5 %) forms. The lowest incidence of mastitis (37.3 %) was recorded at the beginning of milking in May with the same proportion of latent (11.4 %) and subclinical (11.4 %) forms. The most commonly isolated bacterial agents during the milking season were *S. epidermidis* (137 ewes), *S. schleiferi* (84 ewes), *S. aureus* (67 ewes) and *S. uberis* (28 ewes), which showed resistance to streptomycin, novobiocin, penicillin, erythromycin and amoxicillin. The tested strains showed the greatest sensitivity to oxacillin, tetracycline, cephalotin, cloxacilin and methicilin.

Key words: antibiotic; bacterial agents; mastitis; sheep; resistance

ACKNOWLEDGEMENT

The paper was supported by the projects APVV-0679-10 and APVV-0629-07.

FOLIA VETERINARIA, 57, SUPPLEMENTUM 1: 25, 2013

COOPERATION OPPORTUNITIES OF THE SLOVAK SCIENTIFIC COMMUNITY WITH THE EUROPEAN FOOD SAFETY AUTHORITY

Bírošová, Z., Kalánová, T., Theiszová, M.

Ministry of Agriculture and Rural Development of the Slovak Republic, Bratislava
The Slovak Republic

zuzana.birosova@land.gov.sk

ABSTRACT

European Food Safety Authority (EFSA) is the keystone of European Union (EU) risk assessment regarding food and feed safety. To carry out its mission EFSA closely collaborates with scientific communities in the Member States. The scientific community can cooperate with EFSA as individual experts or research institutes and universities as a whole. The paper describes cooperation opportunities of scientific communities with EFSA.

Key words: European Food Safety Authority (EFSA)

CASES OF MILK AND MILK PRODUCTS CAPTURED BY RASFF NETWORK OVER A PERIOD OF 2007—2011

Čurlej, J., Zajác, P., Šnirc, M.

Slovak University of Agriculture in Nitra
Faculty of Biotechnology and Food Sciences in Nitra
Department of Food Hygiene and Safety
The Slovak Republic

Jozef.Curlej@uniag.sk

ABSTRACT

The Rapid Alert System for Food and Feed (RASFF) is an important network controlled by European Commission focusing on health of consumers health and protection of their rights against dangerous or substandard products. Milk and milk products occupy an important position in dairy nutrition of consumers. Although milk proteins are important substances of human nutrition, there are several products made in or outside the EU which pose some risks or exhibit substandard quality. The aim of this paper was to compare the cases involving milk and milk products identified as risky products *via* the Rapid Alert System for Food and Feed over the period of 2007—2011.

Key words: milk; milk products; RASFF

FOLIA VETERINARIA, 57, SUPPLEMENTUM 1: 26, 2013

SAFETY SYSTEMS IN DAIRY INDUSTRY

Dudriková, E., Takáčová, D.

University of Veterinary Medicine and Pharmacy in Košice
Slovak Republic

dudrikova@uvm.sk

ABSTRACT

Milk and milk products are a very important nutritional factor in human nutrition as they contain all essential substances needed for the development of humans. On the other hand, milk and milk products are also a very suitable medium for growth of desirable and undesirable micro-organisms (biological hazard) and may become also a chemical and physical hazard. The aim of this paper is to show potential hazards related to milk and milk products and include them in the system of control and critical control points and thus contribute to their reduction.

Key words: dairy industry; safety; systems

ACKNOWLEDGEMENT

The paper is part of the projects KEGA 011UVLF-4/2012 and KEGA 007011UVLF-4/2012.

MILK AND MILK PRODUCTS AND THEIR CONSUMPTION IN THE CZECH REPUBLIC

Kopřiva, V., Hostovský, M.
Nekvapil, T., Žďárský, M.

University of Veterinary and Pharmaceutical Sciences Brno
The Czech Republic

koprivav@vfu.cz

ABSTRACT

The paper presents analysis of consumption of milk and milk products in the Czech Republic in the years 2000—2010, including the trend of the relevant commodities in the food consumption basket. The analysis included total drinking milk, cow's milk, other milk products, canned milk, cottage cheese and a group of natural cheeses (hard and soft) and processed cheeses. The milk consumption was evaluated in different years in terms of its increase but also its decrease. Consumption of canned milk and curd was balanced. In the period of 2000—2010 the consumption regarding the group of selected cheeses mostly increased.

Key words: consumption of food; food hygiene; milk and milk products; nutrition

FOLIA VETERINARIA, 57, SUPPLEMENTUM 1: 27, 2013

COMPARISON OF CHEMICAL COMPOSITION OF MOTHER'S MILK AND MILK FORMULAS FOR INFANTS

Dičáková, Z., Ondíková, J., Maľa, P.

University of Veterinary Medicine and Pharmacy in Košice
The Slovak Republic

dicakova@uvm.sk

ABSTRACT

Human milk is a complex, changing, hypoallergenic, living fluid. It is considered to be an ideal nutrition for infants till 6 months old. Chemical composition of human milk is unique and suited for individual needs of each newborn. It consists of water (90 %), saccharides (6 %), fats (3 %) and proteins (1 %). Minerals and vitamins constitute less than 0.5 %. There are many infants who cannot be breastfed for as long as it is recommended. Breast milk is a standard for other forms of infant's nutrition. Composition of milk formulas is based on the composition of human milk. Milk formulas are made of cow's milk and are enriched with micro and macro nutrients.

Key words: breast milk; cow's milk; infant formula

ACKNOWLEDGEMENT

The paper is part of the project KEGA 011 UVLF-4/2012.

COMPARISON OF ESSENTIAL CHEMICAL ELEMENTS OF COW'S AND SHEEP'S MILK

Strapáč, I., Baranová, M., Sokol, J.

University of Veterinary Medicine and Pharmacy in Košice
The Slovak Republic

strapac@uvm.sk

ABSTRACT

Samples of whole cow's and sheep's milk were analyzed for copper, manganese, zinc and iron content. Cow's milk shoved higher levels of copper (0.094 mg.kg^{-1}) and iron (2.603 mg.kg^{-1}) than sheep's milk (0.077 and 1.741 mg.kg^{-1}, respectively). Sheep's milk showed higher levels of manganese (0.109 mg.kg^{-1}) and zinc (6.331 mg.kg^{-1}) than cow's milk (0.073 and 5.133 mg.kg^{-1}, respectively). The concentrations of Cu, Mn, Zn and Fe ranged from 0.045 to 0.192; 0.01 to 0.167; 4.53 to 6.505 and 0.489 to 9.273 mg.kg^{-1} in cow's milk, respectively, and from 0.045 to 0.134; 0.065 to 0.164; 4.626 to 7.84 and 0.786 to 3.057 mg.kg^{-1} in sheep's milk, respectively.

Key words: AAS Unicam 939 Solar system; cow's milk, sheep's milk; minerals

ACKNOWLEDGEMENT

The paper is part of the projects KEGA 017UVLF-4/2013 and KEGA 011UVLF-4/2012.

FOLIA VETERINARIA, 57, SUPPLEMENTUM 1: 28, 2013

SOMATIC CELL COUNT IN MILK AFTER LAMB WEANING: POSSIBLE EFFECT OF STRESS FROM WEANING

Antonič, J.[2], Jackuliaková, L.[2]
Uhrinčať, M.[1], Tančin, V.[1, 2]

[1]Animal Production Research Centre in Nitra
[2]Slovak University of Agriculture in Nitra
The Slovak Republic

tancin@cvzv.sk

ABSTRACT

The aim of this experiment was to study the changes of somatic cell count (SCC) during the first three milkings after lamb weaning and during the fourth control milking two weeks later. The study was performed on 36 lactating dairy ewes of two breeds, Tsigai and Improved Valachian. We collected totally 108 samples of milk for analysis. On the basis of SCC the animals were divided to the three categories: low — $SCC < 0.5 \times 10^6$ cells.ml^{-1}; middle — $0.5 \times 10^5 < SCC < 10^6$ cells.ml^{-1}; high — $SCC > 10^6$ cells.ml^{-1}. At first milking after weaning, 64 % of ewes were classified as low SCC category, 8 % as middle and 28 % as high SCC category. The mean SCC was 5.39 ± 0.70 log$_{10}$.ml^{-1} at first milking, 5.66 ± 0.73 log$_{10}$.ml^{-1} at second, 5.68 ± 0.65 log$_{10}$.ml^{-1} at third and 5.26 ± 0.61 log$_{10}$.ml^{-1} at fourth milking. In conclusion, higher percentage of ewes with high SCC during the first milking indicate health problems of udder at the end of the suckling period and the increasing SCC during the following two milkings could by caused by stress from weaning.

Key words: dairy ewes; somatic cells; stress; weaning

ACKNOWLEDGEMENT

The paper is part of the project "MLIEKO 26220220098" of the European Regional Development Fund.

THE EFFECT OF FEEDING SOYBEAN AND RAPESEED MEAL ON THE YIELD AND COMPOSITION OF MILK

Ryšavý, J.[1], Křížová, L.[2], Janštová, B.[1]

[1]Faculty of Veterinary Hygiene and Ecology
University of Veterinary and Pharmaceutical Sciences Brno,
Czech Republic
[2]Agrovýzkum Rapotín, s.r.o., Pohořelice
The Czech Republic

h10021@vfu.cz

ABSTRACT

The aim of the study was to compare the effect of diet supplemented with soybean meal and rapeseed meal on yield and composition of milk. The experiment was carried out on 12 lactating dairy cows that were divided to 2 groups, R (control) and S (experimental). During the experiment, the cows were fed basal diet based on mixed maize silage and alfalfa and peas haylage. The diet was supplemented with either rapeseed meal (R) or soybean meal (S). The experiment was carried out in the form of cross-over design and was divided into 2 periods of 14 days (11 days of preliminary period followed by a 3-day collecting period). DM intake did not differ significantly between groups ($P > 0.05$). Milk yield in group S was higher than in group R ($P < 0.05$). Concentration of protein, fat and casein was not affected by the treatment ($P > 0.05$), however, daily yield of lactose and urea was higher in S than in R ($P < 0.05$).

Key words: dairy cows; maize silage; milk; peas haylage; rapeseed meal; soybean meal

ACKNOWLEDGEMENT

The paper is part of the projects MSM 6215712402 and RO0311, from 28th February, 2011.

FOLIA VETERINARIA, 57, SUPPLEMENTUM 1: 29, 2013

BRAUNVIEH BREED AND ITS USE FOR MILK PRODUCTION IN SLOVAKIA

Gallo, J., Supuková, A., Supuka, P., Zigo, F. Pavľak, A., Maženský, D.

University of Veterinary Medicine and Pharmacy in Košice The Slovak Republic

gallo@uvm.sk

ABSTRACT

The aim of the study was to obtain more information on the origin, use and performance of one of the oldest breed of cattle, the Swiss breed Braunvieh. Under our conditions, the milk yield of this breed is at the level of 6000 kg milk per lactation period, with fat content 3.9—4.2 % and protein content 3.4—3.6 %. In the year 2012, we evaluated lactation periods of 520 cows of Braunvieh breed and hybrids of this breed in the Slovak Republic

Key words: Braunvieh breed; cow; lactation; milk production

ACKNOWLEDGEMENT

The paper is part of the project KEGA 018UVLF-4/2011.

THE QUALITY OF MILK AND DAIRY PRODUCTS

Kučeráková, S., Špánělová, D.

State Veterinary and Food Institute in Bratislava The Slovak Republic

kucerakova@svuba.sk

ABSTRACT

The quality of milk and dairy products is evaluated on the basis of sensory, physical-chemical and microbiological parameters in conformity with the relevant legislative provisions.

The shortcomings regarding the quality of milk and milk products revealed by the State Veterinary and Food Institute in Bratislava in the period from 2009 to 2012 are summarized in this contribution.

Key words: quality of milk and dairy products

FOLIA VETERINARIA, 57, SUPPLEMENTUM 1: 30, 2013

DETERMINATION OF THE FREEZING TEMPERATURE OF MILK OBTAINED FROM SELECTED DISTRIBUTORS

Golian, J., Belej, Ľ., Matysová, M.

Slovak University of Agriculture in Nitra
Faculty of Biotechnology and Food Sciences
Department of Food Hygiene and Safety
The Slovak Republic

Jozef.Golian@uniag.sk

ABSTRACT

In this study we evaluated the freezing point (freezing temperature) of cow's milk obtained from six suppliers in 2012. We found that the freezing point of examined milk did not differ significantly between individual months (mean –0.527 °C). The highest mean freezing temperature (FT) was found in April and May (–0.525 and –0.526 °C, respectively). The highest annual mean value of FT was reached in milk from Košice suppliers (–0.527 °C) and the lowest from suppliers in Prešov (–0.522 °C).

Key words: control; freezing point; milk

RISKS TO CONSUMER HOUSEHOLDS FROM RAW MILK CONSUMPTION WITH RESPECT TO HEAT TREATMENT

Necidová, L., Janštová, B., Cupáková, Š. Dušková, M., Janštová, B. jr., Skočková, A.

University of Veterinary and Pharmaceutical Sciences Brno
The Czech Republic

necidoval@vfu.cz

ABSTRACT

Raw milk consumption risks arise from the potential of milk for microbial contamination. Raw milk from farms or milk vending machines needs to be heat treated before drinking in accordance with the instructions provided. Our study focused on the effect of home heat treatment on devitalisation of selected pathogens and evaluation of product safety relative to whether or not the instructions were specifically followed. Raw cow milk samples were inoculated with the following pathogens: *Staphylococcus aureus*, *Salmonella enteritidis, Listeria monocytogenes* and *Campylobacter jejuni.* Milk was pasteurized under stationary conditions and the effect of temperature range from 73 to 98 °C on the relevant pathogens was studied. We calculated the time that elapsed before the foam was formed, the time required to reach boiling point (whistling sound), and the effect of subsequent boiling. After cooling and during 3 days of storage we carried out microbiological analysis according to ČSN ISO standards and an enzyme pasteurization indicator was determined. We found out that the whole temperature range mentioned above was effective in terms of devitalisation of the pathogenic micro-organisms. Milk treated between 73—98 °C is safe, even though boiling does not occur.

Key words: food safety; pasteurization; pathogenic micro-organisms; raw milk

ACKNOWLEDGEMENT

The paper is part of the projects IGA VFU Brno 16/2013/FVHE and MSM 6215712402.

FOLIA VETERINARIA, 57, SUPPLEMENTUM 1: 31, 2013

NEAR INFRARED SPECTROSCOPY IN ANALYSIS OF MILK AND MILK PRODUCTS

Procházková, Z., Králová, M., Vorlová, L.

University of Veterinary and Pharmaceutical Sciences Brno
The Czech Republic

prochazkovaz@vfu.cz

ABSTRACT

Near infrared spectroscopy (NIRs) is a quick modern method based on the absorption of near-infrared radiation by the bonds in molecules and thus is a suitable method for measuring the chemical composition of foodstuffs. In dairy industry NIRs is being used for its undiscerning application, low-cost operation and environmental safety. Two major applications are used for milk and milk products: quantitative determination for measuring the major components (water, protein, lactose, fat, free fatty acids) and some physical parameters (pH, titratable acidity); qualitative determination for classification of unknown samples.

The aim of this study was to review and compare the potential of utilization of Fourier transform near infrared reflectance spectroscopy for quantitative and qualitative analysis of milk and selected milk products.

Key words: milk; milk products; spectroscopy

ACKNOWLEDGEMENT

The paper is part of the project MSM 6215712402.

CHEESE QUALITY CONTROL BY MEANS OF NIR SPECTROSCOPY

Lužová, T., Šustová, K., Havlíková, M.

Mendel University in Brno, Department of Food Technology
The Czech Republic

tana.luzova@centrum.cz

ABSTRACT

The study describes the potential of NIR spectroscopy to detect counterfeit cheeses. Samples containing vegetable fat, that are available on the market, were analysed and compared with randomly selected cheese types, also from the market network. By means of discriminant analysis we investigated the use of near infrared spectroscopy in terms of confirming the differences between cheeses and their analogues.

Key words: adulteration; cheese; discriminant analysis; FT NIR spectroscopy

ACKNOWLEDGEMENT

The paper was part of the project NAZV KUS QJ1210302.

FOLIA VETERINARIA, 57, SUPPLEMENTUM 1: 32, 2013

COLOUR EVALUATION OF EMMENTAL TYPE CHEESE

Dvořák, P., Salabová, I., Beňová, K., Žďárský, M., Maté, D.

University of Veterinary and Pharmaceutical Sciences Brno
The Czech Republic
University of Veterinary Medicine and Pharmacy in Košice
The Slovak Republic

dvorakp@vfu.c

ABSTRACT

Type, curing, and stocking affect the colour of a cheese. The mean values of CIELAB colorimetric parameters for cheese of the Emmental type on the Czech market vary by about 75 for parameters L* (specific lightness), 1.5 for a* (shift toward red), and 20 for b* (shift toward yellow), at minimal thickness of 7 mm. Long curing results in a dark colour of cheese.

Key words: colorimetric parameters CIELAB; cheese of Emmental type

CHANGES IN COLORIMETRIC PARAMETERS DURING PRODUCTION AND STORAGE OF OLOMOUC CURD CHEESE (OLOMOUCKÉ TVARŮŽKY)

Jůzl, M., Kalhotka, M.

Mendel University in Brno
Department of Food Technology
The Czech Republic

miroslav.juzl@mendelu.cz

ABSTRACT

Olomoucké tvarůžky are acidic-based cheese with golden yellow wax on the surface due to aerobic proteolytic microflora, with completely unique and characteristic flavour, aroma and colour. The aim of this study was to describe the changes related to seasons using the CIELAB colour system. Despite the almost identical initial values of surface lightness ($L^* = 91.47$ to 92.56), at various times we observed significantly different results ($P < 0.05$) at the end of the storage period in winter [$L^* = 60.15$; $a^* = 0.52$ (a^* — shift toward red); $b^* = 18.11$ (b^* — shift toward yellow)] compared with the spring period ($L^* = 50.22$; $a^* = -2.14$; $b^* = 11.22$). The product cut showed less discoloration in the summer.

Key words: CIELAB; colour; lightness; quality; sensory evaluation

ACKNOWLEDGEMENT

The paper is part of the project TP 10/2010.

FOLIA VETERINARIA, 57, SUPPLEMENTUM 1: 33, 2013

SENSORY ANALYSIS OF CAMEMBERT TYPE OF CHEESE AVAILABLE ON THE SLOVAK MARKET

Staruch, L., Mati, M., Jančovičová, J.

Slovak University of Technology in Bratislava
The Slovak Republic

ladislav.staruch@stuba.sk

ABSTRACT

Camembert is a soft-surface ripened, primarily mould ripened cheese. The invention of Camembert is generally credited to Marie Harel in 1790. Proteolysis from the surface to the centre in this cheese is predominantly caused by *Penicillium candidum* (*camembertii*) and *Penicillium caseicolum*.

The aim of the study was to carry out sensory evaluation of 5 samples of the Camembert type of cheese available on the Slovak market.

Key words: Camembert; cheese; sensory evaluation

DISCRIMINANT ANALYSIS OF BUTTER AND COMPOSED FATS BY FT-NIR SPECTROSCOPY

Králová, M., Procházková, Z., Šulcová, H.
Janštová, B., Přidalová, H., Vorlová, L.

University of Veterinary and Pharmaceutical Sciences Brno
Department of Hygiene and Technology of Milk
The Czech Republic

kralovam@vfu.cz

ABSTRACT

The aim of this study was to apply the discriminant analysis to distinguish the NIR spectra of butter and composed fats. We examined 42 samples by Fourier transform near infrared spectroscopy method (FT-NIRs). The spectra of samples were measured on the integration sphere in reflectance mode with the use of compressive cell in the spectral range of 10 000—4000 cm^{-1} with 100 scans. Ten principal components were used for all the calibration models. 100 % variability was described using the spectra without mathematical correction and with 1st derivation of spectra. 99.2 % variability was obtained at 2nd derivation. Thus, discriminant analysis of butter and composed fats by FT-NIRs is a suitable method for their determination.

Key words: butter; discriminant analysis; FT-NIR spectroscopy

ACKNOWLEDGEMENT

The paper is part of the project MSM6215712402.

FOLIA VETERINARIA, 57, SUPPLEMENTUM 1: 34, 2013

MICROBIAL ASPECTS OF THE FORMATION OF BIOGENIC AMINES IN FARM CHEESES

Kalhotka, L., Přichystalová, J., Dostálová, L.

Faculty of Agronomy of Mendelu in Brno
Department of Agrochemistry, Soil Science
Microbiology and Plant Nutrition
The Czech Republic

xkalhotk@node.mendelu.cz

ABSTRACT

Enterobacteriaceae are one of the most important indicators of cheese quality. These bacteria cause many defects and show decarboxylase activity. Our study revealed their decarboxylase activity towards several aminoacids, such as lysine, tyrosine, histidine and ornithine. The produced biogenic amines may cause problems to sensitive persons if they are present in higher levels in cheeses. Coliform bacteria were quite abundant in the cheese. This indicates that higher attention should be paid to hygiene on farms.

Key words: *Enterobacteriaceae*; decarboxylase activity; tyrosine

ACKNOWLEDGEMENT

The paper is part of the project NAZV No. QJ1210302.

DETECTION OF BIOGENIC AMINES IN DAIRY PRODUCTS BY TLC METHOD

Dičáková, Z., Dudriková, E.

University of Veterinary Medicine and Pharmacy in Košice
The Slovak Republic

dicakova@uvm.sk

ABSTRACT

A rapid TLC method was developed for analysis of biogenic amines (BA) in different types of dairy products. The method allows one to prepare and evaluate 10 to 15 samples per one TLC plate within one day. Detection limit of the adjusted method is 15 ng for individual amines in a standard and 1.5 $mg.kg^{-1}$ in a sample. Accuracy of the results was verified by standard addition method. BA concentrations observed in 89 samples ranged from undetectable values to 460 $mg.kg^{-1}$. The highest concentrations of amines were found in cheese and sheep cheese, the lowest in milk and curds.

Key words: biogenic amines (BA); cheese; milk products; TLC

ACKNOWLEDGEMENT

The paper is part of the project KEGA 011 UVLF-4/2012.

FOLIA VETERINARIA, 57, SUPPLEMENTUM 1: 35, 2013

SALT IN CHEESE AND DAIRY PRODUCTS INTENDED FOR CHILDREN

Dičáková, Z., Dudriková, E.

University of Veterinary Medicine and Pharmacy in Košice
The Slovak Republic

dicakova@uvm.sk

ABSTRACT

NaCl content was analyzed in 30 different types of cheeses. The salt content in the cheese for children amounted to 0.66 g and 1.61 g in 100 g of cheese. One serving of cheese (16.7 g) contains 11 % or 27 % of the recommended daily intake for children less than 3 years old (1 g NaCl). The salt content in the other investigated cheeses ranged from 0.16 to 1.98 g per 100 g.

Key words: cheese; dairy products; food for kids; NaCl; salt; sodium content

ACKNOWLEDGEMENT

The paper is part of the project KEGA 011 UVLF-4/2012.

THE QUALITY OF YOGHURT MADE UNDER LABORATORY CONDITIONS

Gallo, J., Vrabec, M., Dudriková, E.

University of Veterinary Medicine and Pharmacy in Košice
The Slovak Republic

gallo@uvm.sk

ABSTRACT

Fermentation of milk is one of the oldest and most widely used methods of converting milk into fermented dairy products. In addition to price the consumer's choice of yoghurt is affected by its sensory qualities, thus the results of sensory evaluation of yoghurt are important, especially from the consumer's point of view. The most important are the appearance, aroma of the product, and above all the taste. Taste and smell of goat milk is different compared to cow's milk and this has a significant impact on the final yoghurt.

Key words: sensory analysis; yoghurt

ACKNOWLEDGEMENT

The paper is part of the project KEGA 011 UVLF-4/2012.

FOLIA VETERINARIA, 57, SUPPLEMENTUM 1: 36, 2013

SENSORY AND ANALYTICAL EVALUATION OF BRYNDZA

Maľa, P., Maľová, J., Majková, L.

University of Veterinary Medicine and Pharmacy in Košice, The Slovak Republic

mala@uvlf.sk

ABSTRACT

We focused our attention on sensory characteristics of sheep cheese samples from various producers to find out more about their popularity. The best results in almost all sensory characteristics (appearance, taste, colour and consistence) from all evaluated samples from traditional producers were obtained for the sheep cheese sample A. According to the sensory characteristic taste, the sheep cheese sample C was evaluated the lowest almost in all the seasons. The results of chemical-physical analysis corresponded to those shown on the product label. The best results in assessing the packaging were obtained for sample B because of its tradition, colour harmony, and overall quality of packaging (label readability), and for the container of private-produced sheep cheese, sample E, due to the traditional theme.

Key words: flavour; sensory analysis; sheep cheese

ACKNOWLEDGEMENT

The paper is part of the project KEGA 017UVLF-4/2013.

EVALUATION OF SOME QUALITY CRITERIA OF YOGHURT MADE FROM MILK SPIKED WITH DIFFERENT ANTIBIOTICS

Pažáková, J., Nagy, J., Popelka, P., Turek, P., Nagyová, A.

University of Veterinary Medicine and Pharmacy in Košice The Slovak Republic

pazakova@uvlf.sk

ABSTRACT

The study was carried out on yoghurt experimentally produced from milk spiked with different levels of antibiotics in order to find out concentration of antibiotics which could affect the yoghurt culture performance. The yoghurt was obtained from milk with experimentally added antibiotics tylosin (TYL), oxytetracycline (OTC), and penicillin G (PNC-G). The quality of yoghurt was evaluated on the basis of titratable acidity (Soxhlet-Henkel method), pH level (digital pH meter) and concentration of lactic acid (isotachophoretic analyser).

The antibiotics can adversely affect fermentation of the yoghurt due to the presence of their residues in concentrations which inhibit yoghurt cultures. Based on the results of titratable acidity, the concentrations of tylosin and oxytetracycline equal to 0.1 $\mu g.g^{-1}$ and the concentration of penicillin equal to 0.01 $\mu g.g^{-1}$ inhibited yoghurt cultures and were above the maximum residue limits in milk set by Commission Regulation (EU) No. 37/2010.

Key words: antibiotics; quality; yoghurt

FOLIA VETERINARIA, 57, SUPPLEMENTUM 1: 37, 2013

DESIRABLE QUALITIES OF LAB STARTER CULTURES USED FOR PRODUCTION OF SELECTED CHEESES

Wiśniewski, J., Nowicki, M., Anusz, K.

Warsaw University of Life Sciences – SGGW (WULS-SGGW)
Faculty of Veterinary Medicine
Department of Food Hygiene and Public Health Protection
Poland

jan_wisniewski1@sggw.pl

ABSTRACT

The paper is devoted to subjects related to production of selected cheeses: Cheddar cheese; Swiss-type cheeses. It describes desired features of LAB starter cultures used in their production. Starter bacteria are selected, defined micro-organisms able to proliferate. They appear in the form of pure or mixed cultures, with controllable composition and specific properties. Depending on the type of cheeses different properties of LAB starter cultures are considered desirable. The present paper describes favourable properties of starter bacteria used in production of Cheddar cheese and, Swiss-type cheeses. The desirable features of LAB starter cultures intended for Cheddar cheese production include: rapid production of lactic acid during the formation of a clot, but at a constant rate; phage resistance; sensitivity to salt (NaCl is added after the fermentation by LAB), although some activity is also required to ferment lactose residues which may be the medium for the development of NSLAB gassing defects and structure of the cheese; activity during aging (production of proteases and peptidases, peptidases activity, activity of proteases that break down bitter peptides), application of homofermentative cocci *Lactococcus lactis subsp. lactisi subsp. cremoris.*

Key words: Cheddar cheese; LAB starter cultures; milk; Swiss-type cheeses

DETERMINATION OF STREPTOMYCIN RESIDUES IN MILK BY ENZYME IMMUNOASSAY AND LIQUID CHROMATOGRAPHY-TANDEM MASS SPECTROMETRY

Biernacki, B., Błądek, T., Śniegocki, T., Posyniak, A.

National Veterinary Research Institute
Department of Pharmacology and Toxicology, Pulawy
Poland

bierbog@piwet.pulawy.pl

ABSTRACT

The use of veterinary medicines in intensive production of animals is evident, so it is impossible to avoid the presence of their residues in food including milk. The enzyme immunoassay (ELISA) and liquid chromatography-tandem mass spectrometry (LC-MS/MS) methods for determination of streptomycin in milk were developed and validated. The preparation of milk samples for ELISA consisted of degreasing and dilution of samples 1:20 with sample dilution buffer (e.g. 50 µl milk + 950 µl buffer). Analytic concentrations were measured photometrically at 450 nm. Streptomycin for the LC-MS/MS method was isolated from milk samples with trichloroacetic acid (TCA). The chromatographic separation was performed on a Luna C18 column using mobile phase consisting of 0.025 % heptafluorobutyric acid (HFBA) and acetonitrile in a gradient mode. ELISA method was validated according to the Guidelines for the Validation of Screening Methods for Residues of Veterinary Medicines 20/1/2010 and LC-MS/MS method according to the Commission Decision 2002/657/EC. The results of validation demonstrated that the ELISA Ridascreen® Streptomycin and LC-MS/MS technique is applicable for the determination of streptomycin residues in milk samples.

Key words: ELISA; LC-MS/MS; milk; residues; streptomycin

FOLIA VETERINARIA, 57, SUPPLEMENTUM 1: 38, 2013

PRESENCE AND IDENTIFICATION OF IMPORTANT BACTERIAL PATHOGENS IN RAW COW'S MILK

Bogdanovičová, K.[1], Karpíšková, R.[2] Koláčková, I.[2], Skočková, A.[1]

[1]University of Veterinary and Pharmaceutical Sciences Brno
[2]Veterinary Research Institute in Brno
The Czech Republic

Bogdanovicova.K@seznam.cz

ABSTRACT

The study focused on the detection of important bacterial pathogens in raw cow's milk. In the period from April to December 2012 we collected 51 samples of raw cow's milk from 22 dairy farms in the Czech Republic. Presence of bacterium *Staphylococcus aureus* was confirmed in 25.5 % of the analyzed samples. On one dairy farm MRSA has been repeatedly isolated. Resistance to antimicrobials was determined using microdilution method. *Campylobacter* spp., *Listeria monocytogenes* and *Salmonella* bacteria were not detected.

Key words: food-borne pathogens; MRSA; *Staphylococcus aureus*

ACKNOWLEDGEMENT

The paper is part of the projects NAZV KUS QJ1230044, QJ1210300 and IGA 15/2013/FVHE.

MICROBIAL CONTAMINATION OF EWE'S MILK IN RELATION TO HYGIENE CONDITIONS DURING HANDLING AND PROCESSING OF MILK

Vrabec, M., Dudriková, E., Gallo, J., Klapáčová, L.

University of Veterinary Medicine and Pharmacy in Košice
The Slovak Republic

vrabecmarek@gmail.com

ABSTRACT

The microflora in raw milk and dairy products is associated with the failure to comply with the principles of hygiene and with inadequate sanitation during obtaining, handling and processing of milk. The aim of this study was to detect the presence of contaminant microflora in samples of ewe's milk, ewe's whey and fresh ewe's cheese, depending on procedures taken to optimize hygiene conditions. Some groups of microbial population (total bacteria count, coliform bacteria, staphylococci, enterococci, lactic acid bacteria) isolated from the samples taken during optimization procedure were studied.

Key words: ewe's milk; hygienic conditions; microbial contamintion

ACKNOWLEDGEMENT

The paper is part of the project KEGA No. 011UVLF-4/2012.

FOLIA VETERINARIA, 57, SUPPLEMENTUM 1: 39, 2013

DIVERSITY OF MICRO-ORGANISMS IN LUMP CHEESE PRODUCED BY FARMER'S METHOD

**Klapáčová, L., Pažáková, J.
Dudriková, E., Gallo, J., Vrabec, M.**

**University of Veterinary Medicine and Pharmacy in Košice
The Slovak Republic**

klapaco@gmail.sk

ABSTRACT

Because the market for cheeses made from unpasteurised milk is expanding, there is increasing concern that their safety should be equal to that of cheeses made from pasteurised milk. The aim of this study was to monitor diversity and dynamics of microflora in lump cheese made from raw cow's milk. The lump cheese was produced in our laboratory. Samples were taken for microbiological examination on days 1, 3, 5 and 7 of ripening of the lump cheese. We focused on the dynamics of growth and development of the microbial groups related to sanitary issues and ripening aspects: enterobacteria, staphylococci, coliform bacteria, lactic acid bacteria. We also focused on milk quality as the primary factor that reflects the safety and quality of the final product.

Key words: diversity; lump cheese; micro-organisms

ACKNOWLEDGEMENT

The paper is part of the project KEGA No. 011 UVLF-4/2012.

MYCOBACTERIUM SPP. FROM WILDLIFE AS POTENTIAL THREAT TO DAIRY CATTLE IN BIESZCZADY (POLAND)

Anusz, K., Orłowska, B., Wiśniewski, J., Nowicki, M.

**Department of Food Hygiene and Public Health Protection
Faculty of Veterinary Medicine
Warsaw University of Life Sciences – SGGW,
Poland**

krzysztof_anusz@sggw.pl

ABSTRACT

The present research was based on historical background concerning tuberculosis cases in European bison from Bieszczady. Bacteriological examination was performed on 215 free-living animals, culled or found dead, from the forest area of Bieszczady during 2006—2009. The studied material also involved four domestic cows. The examination toward the isolation and identification of *Mycobacterium tuberculosis* was carried out using a culture technique (inoculation based on solid medium, prepared according to Lowenstein-Jensen and Stonebrink) and biological tests (challenges in guinea pigs). Parallel to bacteriological identification of the isolated Mycobacterium strains, also molecular confirmation and analysis were performed (PCR, restriction analysis, and sequencing of the selected fragment of region 16S-23S rDNA ITS). Fourteen strains of acid-resistant mycobacteria were isolated and identified as follows: four strains of *M. tuberculosis*, five strains of *M. bovis*, four strains of *M. avium*, and one strain of M. species. *M. bovis* was isolated from two European bisons, two cows and a badger, *M. tuberculosis* strains were isolated from three wolves and a cow whereas *M. avium* was isolated from four red deer. An unidentified strain described as Mycobacterium sp. was also isolated from a red deer.

Key words: dairy cattle; genetic variability Bieszczady; mycobacterium; wildlife

FOLIA VETERINARIA, 57, SUPPLEMENTUM 1: 40, 2013

USE OF MULTIPLEX PCR FOR THE DETECTION OF PATHOGENS IN MILK AND DAIRY PRODUCTS

Nowicki, M., Wiśniewski, J., Anusz, K.

Warsaw University of Life Sciences – SGGW
Faculty of Veterinary Medicine
Department of Food Hygiene and Public Health Protection
Poland

marek_nowicki@sggw.pl

ABSTRACT

Milk and dairy products may present specific hazards to human health. Hazards are associated with the presence of pathogens and chemical factors. In case of milk and dairy products pathogenic bacteria may be dangerous to humans, may cause mastitis in cows or spoilage of dairy products. The culture-based method of detection is time consuming. Multiplex PCR used for detection of pathogens in bulk tank milk, in-line milk filters, manure, and faeces is comparable with the cultivation method. Multiplex PCR may be effectively used for detection of 10 or more bacterial species. Multiplex PCR may also be useful for authentication of dairy products manufactured from the milk of cow, sheep, goat and buffalo. This features and advantages of multiplex PCR makes it a reliable, useful and cost-effective method for food safety purposes.

Key words: dairy products; milk; multiplex PCR, RT PCR

SELECTION OF A MATHEMATICAL MODEL TO CALCULATE THE LIFE CYCLE OF *STAPHYLOCOCCUS AUREUS* IN YOGHURT MANUFACTURED FROM GOAT'S MILK

Bednarko-Młynarczyk, E., Szteyn, J.
Wiszniewska-Łaszczych, A., Liedtke, K.

Department of Veterinary Protection of Public Health
Faculty of Veterinary Medicine
University of Warmia and Mazury, Olsztyn
Poland

elzbieta.bednarko@uwm.edu.pl

ABSTRACT

The latent and subclinical mastitis (SCM) is an important problem in herds of dairy goats. The most common etiologic factor causing SCM are staphylococci. Risk assessment that arises from the presence of the pathogen in the collected milk is especially important for the safety of regional products. The aim of the study was to develop a mathematical model of survival of *Staphylococcus aureus* (*S. aureus*) in the regional yoghurt manufactured from goat's milk. In the experimental model the contaminated yoghurt samples were stored at different temperatures. On the basis of microbiological investigations primary models — Baranyi and Gompertz — were established. They best described the survival of bacteria in the selected product. Arrhenius model was selected as an equation for the estimation of the rate of bacterial growth.

Key words: predictive microbiology; regional food; *Staphylococcus*

FOLIA VETERINARIA, 57, SUPPLEMENTUM 1: 41, 2013

DETECTION OF GENES FOR STAPHYLOCOCCUS ENTEROTOXINS (SEA-SED) PRESENT IN MILK PRODUCTS

Godálová, Z., Rešková, Z., Minarovičová, J.

Food Research Institute in Bratislava
The Slovak Republic

godalova@vup.sk

ABSTRACT

Staphylococcus aureus is a gram positive bacterium that is carried by about one third of the general population and is responsible for common and serious diseases. It causes a wide variety of diseases ranging from skin infections to life-threatening conditions, such as pneumonia or endocarditis. These diseases include food poisoning and toxic shock syndrome, which are caused by exotoxins produced by *S. aureus*. A sensitive detection method of four genes (sea, seb, sec, sed) responsible for enterotoxin production by *Staphylococcus aureus* based on real time polymerase chain reaction (Real-time PCR) was developed. The sea gene is carried by a temperate bacteriophage, seb and sec genes are located on a chromosome and sec gene is plasmid carried.

Key words: enterotoxins; real-time PCR; *Staphylococcus aureus*

CHARACTERISTICS OF *ESCHERICHIA COLI* FROM RAW MILK AND MILK FILTERS

Skočková, A., Bogdanovičová, K., Karpíšková, R.

University of Veterinary and Pharmaceutical Sciences Brno,
Department of Hygiene and Technology of Milk
The Czech Republic

askockova@vfu.cz

ABSTRACT

The study focused on characterization of *Escherichia coli* (*E. coli*) isolates obtained from raw cow's milk (n = 84) and milk filters (n = 73). We investigated resistance to antimicrobial agents and presence of selected resistance and virulence genes were detected. The level of antibiotic resistance in the obtained isolates was low, we detected most often resistance to ampicillin and tetracycline. No virulence genes were detected. Resistance genes encoding resistance to tetracycline tetA and tetB and the gene bla_{SHV} encoding resistance to β-lactams were detected in the same isolates. This made them an important reservoir of resistance genes spreading through the food chain.

Key words: antimicrobials; resistance genes; virulence genes

ACKNOWLEDGEMENT

The paper is part of the projects KUS QJ 1230044, KUS QJ 1210300 and IGA 15/2013/FVHE.

FOLIA VETERINARIA, 57, SUPPLEMENTUM 1: 42, 2013

MULTIPLE LOCUS VARIABLE NUMBER TANDEM REPEAT ANALYSIS AND MULTI-LOCUS SEQUENCE TYPING AS EFECTIVE METHODS FOR GENOTYPING *S. AUREUS* ISOLATED FROM DAIRY PRODUCTS

Rešková, Z., Koreňová, J.

Food Research Institute in Bratislava
The Slovak Republic

reskova@vup.sk

ABSTRACT

Foods can serve as vehicles of many pathogenic and toxigenic agents of disease. Bacteria are generally considered to be the most important agents of foodborne illness and can be divided to those that grow in the food and produce an active toxin before consumption (e. g. *Staphylococcus aureus)* and the agents that merely exist as food contaminants but are able to initiate infection when swallowed (e. g. *Listeria monocytogenes* or *Salmonella* spp.). Collection of epidemiological information is an important step to ensure food safety and animal health. A few techniques are currently used for the large-scale analysis of the diversity of bacterial pathogens like *S. aureus*. Some of these are namely multi locus sequence typing (MLST), spa typing, and multiple locus variable number of tandem repeats (VNTR) analysis (MLVA). Previously, we have used MLVA and MLST methods for typing of *S. aureus* isolates. Presently we have improved our MLVA method by substituting gel electrophoresis with column (capillary) electrophoresis. Our results suggested improvement of the discriminatory power of MLVA to a level equal or even better than that of MLST.

Key words: Multiple locus variable number tandem repeat analyses; Multi-locus sequence typing; typing of *S. aureus*

PREVALENCE OF ANTIMICROBIAL RESISTANCE IN COAGULASE-NEGATIVE STAPHYLOCOCCI ISOLATED FROM RAW COW AND SHEEP MILK

Čuvalová, Z., Brtková, A., Kantíková, M.

State Veterinary and Food Institute in Dolný Kubín
The Slovak Republic

cuvalova@svpudk.sk

ABSTRACT

The study focused on species identification of coagulase-negative staphylococci present in raw cow and sheep milk, together with determination of antimicrobial profile of selected antibacterial agents on the phenotypic level as well as molecular one in isolates resistant to oxacillin and cefoxitin. We investigated 46 isolates of staphylococci obtained from samples of raw cow milk and 19 isolates obtained from raw sheep milk, delivered to State Veterinary and Food Institute within the regular inspection. Isolates from raw cow milk showed the highest resistance against ampicillin (AMP) and penicillin (PNC) (47 %); those from raw sheep milk against tetracycline (TTC, 32 %). All isolates were fully susceptible to gentamycin (GEN) and vankomycin (VAN). For isolates resistant to oxacilin, the presence of PBP2a was monitored on the phenotypic level, together with the presence of mecA gene on the molecular level. Their presence was confirmed in 1 isolate of *S. epidermidis* from raw cow milk and 1 isolate of *S. xylosus* from raw sheep milk.

Key words: identification of coagulase-negative staphylococci; milk; resistance

FOLIA VETERINARIA, 57, SUPPLEMENTUM 1: 43, 2013

SWEET POTATO TUBERS (*HELIANTHUS TUBEROSUS*) – A RICH SOURCE OF SOLUBLE FIBRE INULIN SUITABLE FOR PATIENTS WITH DIABETES MELITUS 2

Strapáč, I., Vargová, L., Baranová, M.

University of Veterinary Medicine and Pharmacy in Košice
The Slovak Republic

strapac@uvm.sk

ABSTRACT

The Jerusalem artichoke or topinambur (*Helianthus tuberosus* L.) is a fascinating species showing significant health benefits when included in human and animal diets. It can also be used for production of biofuels and for synthesis of new products. Over the past 300 years, interest in this species has vacillated widely. In the topinambur carbon is stored as inulin, mainly fructose polymers. In terms of nutrition, it is considered a form of soluble fibre. Its caloric value in humans is low. Inulin decreases blood glucose and cholesterol. The analyzed samples of sweet potatoes contained 74.94 % of moisture, 11.7 g of inulin 5.4 g of undiluted fibre and 1.29 % of ash.

Key words: Diabetes melitus2; *Helianthus tuberosus*; inulin; sweet potatoes; topinambur

ACKNOWLEDGEMENT

The paper is part of the projects KEGA 017UVLF-4/2013 and KEGA 011UVLF-4/2012.

COMPARISON OF THE LEVEL OF CHEMICAL ELEMENTS IN SWEET POTATOES *HELIANTHUS TUBEROSUS* AND POTATOES *SOLANUMTUBEROSUM*

Strapáč, I., Vargová, L., Baranová, M.

University of Veterinary Medicine and Pharmacy in Košice
The Slovak Republic

strapac@uvm.sk

ABSTRACT

Results presented in this study were obtained using inductively coupled plasma mass spectrometry (ICP-MS). The essential microelements copper (Cu), manganese (Mn), iron (Fe), zinc (Zn), and macroelements calcium (Ca), magnesium (Mg), sodium (Na), potassium (K), phosphorus (P), and toxic elements mercury (Hg), cadmium (Cd), lead (Pb) and arsenic (As) were determined in sweet potatoes and potato tubers. The mean levels (mg.kg^{-1}fresh weight) in potato tuber samples were: Cu 1.059; Mn 1.174; Fe 14.12; and Zn 4.401. They were higher than in sweet potatoes (0.847, 0.185, 4.206 and 0.962, respectively). The mean content of macroelements (mg.kg^{-1}fresh weight) in sweet potato samples was: Ca 60.32; K 1199; Na 24.75; and P 889.6. These levels were higher than in potato tubers except for Mg (260 mg.kg^{-1}). The toxic elements did not exceed hygiene limits in any examined sample. The present study confirmed considerable variation of element contents in analyzed samples.

Key words: *Helianthus tuberosus;* ICP-MS; macroelements; microelements; *Solanum tuberosum*; sweet potatoes; topinambur

ACKNOWLEDGEMENT

The paper is part of the projects KEGA 017UVLF-4/2013 and KEGA 011UVLF-4/2012.

FOLIA VETERINARIA, 57, SUPPLEMENTUM 1: 44, 2013

DETERMINATION OF FATTY ACID METHYL ESTERS IN N-HEXANE EXTRACT OF SWEET POTATO *HELIANTHUS TUBEROSUS*

Strapáč, I., Vargová, L., Baranová, M.

University of Veterinary Medicine and Pharmacy in Košice
The Slovak Republic

strapac@uvm.sk

ABSTRACT

The 100 g of fresh sweet potatoes *Helianthus tuberosus* contained 270—300 mg of n-hexane extractable material. Fatty acid methyl esters (FAMEs) were analysed using gas chromatography (GC), utilizing a HP-23 cis, trans column (Hewlett Packard). The samples showed 17 chromatographic peaks. Twelve FAMEs were detected. Palmitic acid (31.81 %), linoleic acid (34.53 %) and linolenic acid (9.377 %) were the predominant fatty acids.

Key words: Fatty acid methyl esters; FAMEs; GC; *Helianthus tuberosus*; potatoes; topinambur

ACKNOWLEDGEMENT

The paper is part of the projects KEGA 017UVLF-4/2013 and KEGA 011UVLF-4/2012.

ASSESSMENT OF THE STRUCTURE AND PALATABILITY OF WHOLE BREAD WITH ADDITION OF BUCKWHEAT, GROATS AND OATS

Ošťádalová, M., Tremlová, B., Čáslavková, P. Eliášová, M., Pokorná, J., Bartl, P.

Department of Vegetable Foodstuff
Faculty of Veterinary Hygiene and Ecology
University of Veterinary and Pharmaceutical Sciences Brno
The Czech Republic

m.ostadalova@gmail.com

ABSTRACT

The aim was to make and compare whole bread from spelt flour with added cereals (in concentration 10—50 %), without the addition of enzymes and other enhancing substances. The breads were baked in a laboratory and subjected to sensory analyses. We assessed structure of bread (hardness, porosity, sensation in the mouth when chewing and sensation in the mouth when swallowing) and palatability. It was found, that concentration of about 20 to 30 % increases the sensory quality of the products. Bread containing oats and buckwheat were assessed the best; breads with groats were assessed the worst.

Key words: cereals; sensory analysis; spelt flour

ACKNOWLEDGEMENT

The paper is part of the project 17/2012/FVHE.

FOLIA VETERINARIA, 57, SUPPLEMENTUM 1: 45, 2013

THE INFLUENCE OF THE ADDITION OF BUCKWHEAT (*FAGOPHYRUM ESCULENTUM*) ON THE VOLUME OF WHOLEMEAL BAKERY PRODUCTS

Eliášová, M., Tremlová, B., Čáslavová, P. Ošťádalová, M., Pokorná, J.

Faculty of Veterinary Hygiene and Ecology
University of Veterinary and Pharmaceutical Sciences Brno
The Czech Republic

eliasova.martinka@seznam.cz

ABSTRACT

The study evaluated the effect of addition of buckwheat (*Fagophyrum esculentum*) on the volume of bakery products made of wholemeal wheat (*Triticum aestivum*) and wholemeal spelled (*Triticum spelta*). The addition of 10 %, 20 %, 30 %, 40 % and 50 % buckwheat negatively correlated with the volume of the investigated bakery products. The spelled wholemeal flour decreased volume of bakery products compared with wheat wholemeal flour ($P < 0.05$).

Key words: buckwheat; cereals; flours; spelt

ACKNOWLEDGEMENT

The paper is part of the project IGA 17/2012/FVHE.

EFFECT OF WHEAT CULTIVAR ON PROPORTIONAL REPRESENTATION OF PROTEIN AND STARCH

Talandová, M., Kocfeldová, I, Pospiech, M., Tremlová, B.

Faculty of Veterinary Hygiene and Ecology, University of Veterinary and Pharmaceutical Sciences Brno
The Czech Republic

talandovam@vfu.cz

ABSTRACT

The study examined the potential influence of wheat cultivar on the microstructure of endosperm, especially with respect to the ratio of proteins and polysaccharides. The investigations included two wheat cultivars, Kerubino A and Ludwig E. Ludwig wheat cultivars were first stained using Lugol's dye process-Calleja. Microstructure of the endosperm was then observed under a stereomicroscope. The composition of the endosperm cultivars was evaluated using Scientist Image Analyser ACC and the results were processed statistically.

Key words: Kerubino A; Ludwig E; microstructure; stereomicroscopy

FOLIA VETERINARIA, 57, SUPPLEMENTUM 1: 46, 2013

MEATLESS FROZEN PRODUCTS GOODY FOODY

Baranová, M., Maľa, P., Strapáč, I.

University of Veterinary Medicine and Pharmacy in Košice
The Slovak Republic

baranova@uvm.sk

ABSTRACT

Soy proteins as healthy, non-cholesterol source of proteins are a good alternative to traditional animal sources like meat, eggs and dairy products. We carried out sensory evaluation of three meatless delicious Goody Foody (Natural Chicken style, Beef Style and Chicken style with vegetables) products with high content of vegetable proteins (soya and wheat), recommended as alternatives to poultry and beef. They were flavoured with natural spices, extracts and taste substances without preservatives and artificial colours. Their organoleptic characteristics (taste, smell, texture and appearance) were evaluated as good, very good and excellent. Natural Chicken style Goody Foody with 541 points was the best product in taste, smell and texture. Chicken style with vegetables was the best product in appearance. Goody Foody Beef steak obtained the least points of all, but the mean values of all its organoleptic characteristics showed that this product was accepted by evaluators as good to very good too. The evaluated products are unique and provide delicious meatless alternatives to many popular meat meals. They can be prepared in few minutes.

Key words: meatless delicious; sensory evaluation; soya; textured vegetable proteins

ACKNOWLEDGEMENT

The paper is part of the project KEGA 011UVLF-4/2012.

SENSORY EVALUATION OF FROZEN VEGETABLE MIXTURES

Baranová, M., Maľa, P., Strapáč, I., Dudriková, E.

University of Veterinary Medicine and Pharmacy in Košice
The Slovak Republic

baranova@uvm.sk

ABSTRACT

The aim of this paper was to evaluate organoleptic quality of selected market types of frozen vegetables. The sensory evaluation was based on scale and profile methods. We evaluated deep-frozen vegetable mixtures "Vinická polievková zmes" (350 g), EQUUS a.s. VINICA, the Slovak Republic, and "ICEFIELD polievková zmes" (350 g), made by unspecified manufacturer and sold by discount supermarket chain Lidl. The results of sensory evaluation of both deep-frozen vegetable mixtures in the standard packages by means of 10 points hedonic scale showed that slow defrosting for four hours at room temperature lowered the sensory characteristics appearance and consistency in comparison with the values obtained in case of defrosting by boiling for one minute. Both deep-frozen vegetable mixtures were characterized as useful to excellent. Results of sensory evaluation obtained by profile method of individual components of deep-frozen vegetable mixtures (carrot, parsley, peas and cauliflower) confirmed unsuitability of slow defrosting of the deep-frozen vegetable mixtures and their individual components.

Key words: frozen vegetables; quality of frozen vegetables; sensory analysis

ACKNOWLEDGEMENT

The paper is part of the project KEGA 011UVLF-4/2012.

FOLIA VETERINARIA, 57, SUPPLEMENTUM 1: 47, 2013

ANTIOXIDANTS IN RED WINES AND THEIR IMPACT ON CONSUMER'S HEALTH

Marcinčák, S., Bača M., Mihalečková, V., Špakovská, E.

University of Veterinary Medicine and Pharmacy in Košice
The Slovak Republic

marcincak@uvlf.sk

ABSTRACT

The aim of this study was to determine antioxidant content and antioxidant activity of selected red wines. We investigated 11 wines of different vintages, variety, and region of production. The wines were evaluated for the content of total polyphenols and flavonoids and for their antioxidant activity (diphenylpicrylhydrazyl method – DPPH).

The content of polyphenols in wines ranged from 1.7 to 4.8 $g.l^{-1}$. Flavonoids belong to polyphenols and play a major role in antioxidant activity. Their levels ranged from 0.93 to 4.17 $g.l^{-1}$. The evaluated red wines showed good antioxidant activity which ranged from 64.14 to 87.37 %.

Key words: antioxidant activity; flavonoids; polyphenols; red wines

ACKNOWLEDGEMENT

The paper is part of the project VEGA 1/0648/11.

THE EFFECT OF ADDITION OF SELECTED CEREALS ON THE STRUCTURE OF RYE BREAD

Pokorná, J., Tremlová, B., Ošťádalová, M. Čáslavková, P., Eliášová, M., Bartl, P.

Faculty of Veterinary Hygiene and Ecology,
University of Veterinary and Pharmaceutical Sciences Brno
The Czech Republic

pokornaj@vfu.cz

ABSTRACT

We conducted baking experiment with rye flour to which we added buckwheat and groats to reach a concentration of 10—50 % in the dough. The aim of the study was to determine the influence of these cereals on improvement of sensory properties and on the structure and characteristics of bread crumb (hardness and porosity). Sensory analysis established a positive effect of the addition of groats and buckwheat into the dough. The addition of selected cereals affected not only the structure of the final product but also improved the sensory properties of the wholemeal bread.

Key words: buckwheat; groats; porosity; sensory analysis

ACKNOWLEDGEMENT

The paper is part of the project 17/2012/FVHE.

FOLIA VETERINARIA, 57, SUPPLEMENTUM 1: 48, 2013

EFFECT OF THE ADDITION OF LUPINE (*LUPINUS* SPP.) ON SELECTED TEXTUROMETRIC PROPERTIES OF FRANKFURTERS

Revák, O., Bajzík, P., Kráľ, M., Golian, J.

Department of Food Hygiene and Safety, Faculty of Biotechnology and Food Sciences, Slovak university of agriculture in Nitra
The Slovak Republic

xrevak@is.uniag.sk

ABSTRACT

The aim of this study was to compare selected texturometric properties, such as hardness, firmness and flexibility. Frankfurters were produced in an experimental development laboratory in Močenok, the Slovak Republic. Characteristics of the frankfurters were measured with a TA.XT Plus texturometer. Hardness and stickiness was compared with a negative sample. The negative sample reached hardness 4 146 g in comparison with 2 444 g hardness of the sample with 30 % addition of lupine. The 1 % addition of lupine decreased hardness by about 2.5 % and the addition of 30 % lupine by about 40 %.

Key words: frankfurters; *Lupinus* spp.; texture analysis

THE OCCURRENCE OF AFLATOXINS IN FOOD

Jevinová, P., Pipová, M., Regecová, I. Popelka,P., Marcinčák, S.

University of Veterinary Medicine and Pharmacy in Košice
The Slovak Republic

jevinova@uvm.sk

ABSTRACT

Based on the reports published in the Rapid Alert System for Food and Feed we processed results on the foods that exceed the maximum permitted limits for aflatoxin B_1 (AFB1) for the period of 2009—2012. For the reporting period, of the reported commodities exceeding the maximum limits for aflatoxins, a prominent place was occupied by peanuts, pistachios, roasted peanuts and dried figs. The largest number of AFB1 reports on exceeding the maximum level was recorded for peanuts and their derivatives in 2011 (227 reports). During the reporting period there was a decline in the number of reports on the occurrence AFB1 in pistachios. While in 2009 there were 134 recorded reports, in 2012 there were only 30. A reverse trend was observed in the case of dried figs for which the number of reports increased from 47 in 2009 to 143 in 2012.

Key words: aflatoxin; *Aspergillus;* micromycetes; mycotoxins

ACKNOWLEDGEMENT

The paper is part of the project KEGA No. 010UVLF-4/2011.

FOLIA VETERINARIA, 57, SUPPLEMENTUM 1: 49, 2013

EFFECT OF PREVENTION AND CONTROL OF MASTITIS IN DAIRY COW'S BREEDING

Vasiľ, M., Elečko, J., Farkašová, Zigo, F.

University of Veterinary Medicine and Pharmacy in Košice
The Slovak Republic

vasil@uvm.sk

ABSTRACT

We analysed the effect of two-year implementation of preventive and control measures in the breeding of 124 cows divided into categories according to the number of somatic cells. Continuous testing showed that the risk of latent or subclinical mastitis recorded in the first category of dairy cows with the somatic cell count (SCC) up to 100 thousand reached 4.1 %, in the category with SCC 100—200 thousand 33.3 % and in that with SCC 200—400 thousand 42.9 %. However, the risk of subclinical and clinical mastitis recorded in the category with SCC 400—600 000 ml^{-1} ranged from 84.2 % to 100.0 %. Therapeutic efficacy of the treatment of clinical mastitis in the first three categories ranged from 100.0 % to 85.7 %. The therapeutic treatment of 43 cases of mastitis in the dairy category 400—600 000 ml^{-1} SCC was effective in 76.7 % of cows. In the other categories it decreased gradually to 45.0 %.

Key words: bacteria; control; dairy cow; environmental; mastitis; prevention

ACKNOWLEDGEMENT

The paper is part of the projects APVV-0679-10 and APVV-0629-07.

THE USE OF ACUTE PHASE PROTEINS IN LABORATORY DIAGNOSIS OF MASTITIS

Kováč, G., Tóthová, Cs., Nagy, O.

University of Veterinary Medicine and Pharmacy in Košice
The Slovak Republic

kovac@uvm.sk

ABSTRACT

The objective of this study was to evaluate the influence of clinical and sub-clinical mastitis on concentration of selected acute phase proteins in dairy cows (n = 41). According to results of clinical examination of the udder and the results of California Mastitis Test (CMT) the animals were divided into 4 groups. Milk samples were used to assess the concentrations of milk amyloid A (M-SAA), and haptoglobin (Hp) and serum amyloid A (SAA) were assessed in blood samples. The results showed significant highest mean M-SAA concentration in cows with clinical mastitis ($P < 0.001$). The concentrations of M-SAA in milk samples increased with increasing CMT score. The serum concentrations of Hp and SAA showed also gradual significant increase with increasing CMT score and clinical changes in the udder ($P < 0.05$ and $P < 0.05$, respectively). Our results suggest the usefulness of acute phase proteins for the diagnosis of bovine mastitis as well as for determination of the severity of mastitis.

Key words: dairy cows; haptoglobin; mastitis; milk amyloid A; serum amyloid A;

ACKNOWLEDGEMENT

The paper is part of the projects APVV-0475-10 and VEGA 1/0592/11.

FOLIA VETERINARIA, 57, SUPPLEMENTUM 1: 50, 2013

THE EFFECT OF SOMATIC CELL COUNT ON MILK YIELD OF DAIRY COWS

Tančin, V. S.[1, 2], Uhrinčať, M.[1]

[1]**Animal Production Research Centre,**
[2]**Slovak University of Agriculture, Nitra**
The Slovak Republic

tancin@cvzv.sk

ABSTRACT

The aim of the study was to examine the effect of high and low SCC (somatic cell counts) at quarter level on milk production and other parameters of milkability. We investigated a total of 62 Holstein cows free of clinical symptoms of mastitis in the first to third lactation and different stages of lactation. On the basis of SCC the quarters were divided into two groups: low (under 2.10^5 per ml) and high (over 4.10^5 per ml). For the statistical evaluation the group of cows was selected from the above mentioned group on the basis of different SCC between two quarters with low and contralateral high SCC. Thus 14 cows with 198 pairs of quarters were tested throughout lactation. The milk yield and peak flow rate in all stages of lactation was significantly reduced in high quarters as compared to contralateral low quarters.

Key words: dairy cows; milk yield; quarter; somatic cells

ACKNOWLEDGEMENT

The paper was part of the project "MLIEKO 26220220098" of the European Regional Development Fund.

DETERMINATION OF SOMATIC CELLCOUNTS IN MILK FROM SELECTED DISTRIBUTORS

Golian, J., Belej, Ľ., Matysová, M.

Slovak University of Agriculture in Nitra
Faculty of Biotechnology and Food Sciences in Nitra
Department of Food Hygiene and Safety
The Slovak Republic

Jozef.Golian@uniag.sk

ABSTRACT

In this study we evaluated the number of somatic cell counts in cow milk from six suppliers in 2012. The best results of somatic cell counts (SCC) were obtained in milk from the supplier from Bardejov in January (157.10^3 ml^{-1}) and the worst in milk from the supplier from Stropkov (386.10^3 ml^{-1}) in August. According to SCC the results were included in the respective groups. 13 % of them were in the group with SCC in the range 100–$200.10^3$and 53 % ranged between 200.10^3 and 300.10^3.

Key words: inspection; milk; somatic cell count

FOLIA VETERINARIA, 57, SUPPLEMENTUM 1: 51, 2013

SCREENING OF RESIDUES OF ANTIBIOTICS WITH MICROBIAL INHIBITION TESTS

Gondová, Z., Kožárová, I., Poláková, Z.

University of Veterinary Medicine and Pharmacy in Košice
The Slovak Republic

zuzana.gondov31@gmail.com

ABSTRACT

Antibiotics are used to treat infectious diseases of animals. However, their use is associated with a risk of the presence of antibiotic residues in the edible tissues and products of food-producing animals. To protect the health of consumers, the maximum residue limit (MRL) should be established for each antibiotic in each food commodity. Screening for antibiotic residues in such products by appropriate methods is an important part of protection of consumer health. Microbial inhibition tests (MITs) are used for initial screening of antibiotic residues in all animal products, including milk. The present paper deals not only with the history of the development of MIT but also provides an overview of the MITs currently used in practice.

Key words: antibiotics; microbial inhibition tests; milk; screening

ACKNOWLEDGEMENT

The paper is part of the project VEGA 1/0939/12.

THE OCCURRENCE OF RESISTANCE TO ANTIBIOTICS IN BACTERIA ISOLATED FROM TANK MILK OF DAIRY COWS

Vasiľ, M., Farkašová, Z., Elečko, J., Zigo, F.

University of Veterinary Medicine and Pharmacy in Košice
The Slovak Republic

vasil@uvm.sk

ABSTRACT

In the experiment 138 tank milk samples were examined. We identified udder pathogens and established resistance to 12 types of antibiotics. All bacteria have been evaluated as medium-sensitive against a minimum of 50 % of the tested antibiotics. The most resistant strains of bacteria were *Proteus mirabilis* (50 %) and *Enterococcus* spp. (41.8 %). Coagulase-positive staphylococci (CPS) and coagulase-negative staphylococci (CNS) were evaluated as sensitive, primarily to cefoxitin and linkomycin. The highest resistance developed to penicillin (in 5 species of bacteria), novobiocin, neomycin and streptomycin. Relatively high number of resistant bacteria isolated from tank milk showed that the risk is associated predominantly with the milk from cows milked by machines.

Key words: dairy cows' milk; resistance to antibiotics

ACKNOWLEDGEMENT

The paper is part of the projects APVV-0679-10 and APVV-0629-07.

FOLIA VETERINARIA, 57, SUPPLEMENTUM 1: 52, 2013

HISTOPATHOLOGY OF BOVINE MASTITIS

Dudriková, E., Dancáková, Ľ.
Dudriková, K., Lenhardt, Ľ.

University of Veterinary Medicine and Pharmacy in Košice
The Slovak Republic

dudrikova@uvm.sk

ABSTRACT

The aim of this study was to report on the microbiological and histopathological aspects of the mammary quarters' parenchyma of slaughtered dairy cows. A total of 164 quarters of mammary glands were subjected to microbiological and histopathological examination. Micro-organisms were isolated from 104 samples (63 %); 54 (33 %) of the 164 samples did not show any histological changes. Coagulase-negative staphylococci were observed in 43 of the samples. Staphylococci were detected in 48 % of the samples followed by coagulase-positive staphylococci (35 %), streptococci (4 %) and mixed infections (2 %). *Staphylococcus* spp. and *Streptococcus* spp. were associated mainly with chronic inflammatory response. Samples from which no microorganisms were isolated (n = 60) showed no histological changes (82 % of the cases). These results were higher ($P < 0.05$) when compared to the samples with micro-organisms and without changes.

Key words: control; dairy herds; mastitis

ACKNOWLEDGEMENT

The paper is part of the projects KEGA No. 011UVLF-4/2012 and KEGA No. 007011UVLF-4/2012.

SCREENING OF ANTIBIOTIC RESIDUES IN MILK BY IMMUNOCHEMICAL METHODS

Poláková, Z., Kožárová, I., Gondová, Z.

University of Veterinary Medicine and Pharmacy in Košice
The Slovak Republic

zuzutegdesova@gmail.com

ABSTRACT

Antibiotics are widely used in dairy husbandry for the therapy of bacterial diseases, such as mastitis. The most preferred class of antibiotics administered to lactating cows are beta-lactams. Their potential occurrence in milk may cause range of negative effects on the health of consumers, but also with respect to processing of milk. The present paper describes simple rapid tests for detection of the presence of residues of antibiotics in milk before transferring it to a milk tank.

Key words: antibiotics; methods; milk residues

ACKNOWLEDGEMENT

The paper is part of the project VEGA 1/0939/12.

FOLIA VETERINARIA, 57, SUPPLEMENTUM 1: 53, 2013

EVALUATION OF ENVIRONMENTAL HYGIENE AND HAND HYGIENE OF EMPLOYEES WORKING IN A DAIRY PLANT

Kachnič, J., Sasáková, N., Veszelits Laktičová, K. Brenesselová, M., Ondrašovičová, O., Ondrašovič, M.

University of Veterinary Medicine and Pharmacy in Košice The Slovak Republic

kachnic.jano@gmail.com

ABSTRACT

Hygiene is associated with the food industry since its inception, although effectiveness of hygiene measures varied at different times in relation to production and knowledge level. Today, certainly no one will discuss the need for sanitation and hygiene rules in food production and certainly all agree that their observation will certainly reduce the health risks for the consumer, extend shelf life and affect product quality. The monitored dairy is one of a group of large plants manufacturing a wide range of dairy products. The operation was investigated and analyzed at the level of hygiene of surfaces of equipment used in 3 different stages of the production of dairy products: cheese, yoghurt, cottage cheese, using the ATP method. Swabs were taken before and after disinfection. In addition, we evaluated also hand hygiene of the staff by ATP swabs and impression method.

Key words: ATP; dairy plant; hands; hygiene; sanitation

HYGIENE REQUIREMENTS ON WATER QUALITY FROM PRIMARY MILK PRODUCTION

Sasáková, N., Veszelits Laktičová, K. Kachnič, J., Hromada, R., Ondrašovičová, O. Ondrašovič, M., Gregová, G.

University of Veterinary Medicine and Pharmacy in Košice The Slovak Republic

sasakova@uvm.sk

ABSTRACT

In Slovakia, the regions with the most endangered ground and surface waters are located particularly in the northern and eastern territories. The aim of the study was to examine the quality of drinking water from sources used on agricultural farms intended for primary milk production, set by the Governmental Order of SR No. 496/2010 Coll. on requirements for drinking water and control of quality of drinking water. Chemical investigation showed that limits for nitrates and chlorides were exceeded in samples from sources for individual supply 3 and 4. The most relevant are the results of microbiological examination. Coliform bacteria were present only in sources for individual supply. The maximum acceptable limits for *E. coli* (EC) in sources for mass supply were not exceeded but they were exceeded in samples from sources for individual supply throughout investigations. The bacteriological contamination of water sources can originate from animals on investigated farms, unsuitable location of wells or absence of any adjustment of well surroundings.

Key words: drinking water; examination of quality; primary milk production

ACKNOWLEDGEMENT

The paper is part of the project VEGA 1/0950/12.

FOLIA VETERINARIA, 57, SUPPLEMENTUM 1: 54, 2013

THE IMPORTANCE OF ATP METHOD IN TERMS OF HYGIENE AND SAFETY OF DAIRY PRODUCTS

Veszelits Laktičová, K., Sasáková, N. Hromada, R., Ondrašovičová, O., Ondrašovič, M. Gregová, G., Kachnič, J.

University of Veterinary Medicine and Pharmacy in Košice, The Slovak Republic

lakticova@uvm.sk

ABSTRACT

Hygiene and sanitation is essential in dairy industry. The time-demanding conventional microbiological methods do not fulfil requirements of food hygiene practice that stress rapid obtaining of results when evaluating effectiveness of sanitation. The bioluminescence methods based on determination of ATP are new modern methods advantageous with regard to their rapidity, simplicity, low time and easy manipulation. The results obtained in the investigated dairy plant showed that disinfection was effective in all sections with the exception of cottage cheese production. In this section we recorded on Floor IV and on Table increased total counts of bacteria and coliform bacteria. Contamination of this part of premises was confirmed by the ATP results. The mentioned counts changed after some time up to the beginning of production and corrective measures were taken on the basis of ATP swabs. This indicates that the practical use of bioluminescence method in food hygiene is justified as it allows to take adequate corrective measures.

Key words: ATP; disinfection; hygiene; milk industry

ACKNOWLEDGEMENT

The paper is part of the project VEGA 1/0950/12.

METHODS OF SAMPLE PREPARATION FOR ANALYSIS OF PESTICIDE RESIDUES IN FOODSTUFFS

Sokol, J., Strapáč, I., Žatko, D.

University of Veterinary Medicine and Pharmacy in Košice The Slovak Republic

sokol@uvm.sk

ABSTRACT

The paper compares the methods of extraction and preparation of samples for determination of pesticide residues in biological samples. The conventional method of liquid-liquid extraction is compared with the new method of solid phase extraction, matrix solid phase dispersion and QuEChERS method.

Key words: biological samples; determination of pesticide residues

ACKNOWLEDGEMENT

The paper is part of the project Vega 1/1065/11.