

**Editorial: VÁRADI, M.:** Bisensor as a new tool in food analysis. pp. 209-210.  
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**ABUGOCH, L. E., QUITRAL, V., VINAGRE, J., LARRAIN, M.A. & J.P. QUIJADA:**  
The influence of frozen and canned storage on the chemical freshness parameters, determined in golden kingclip (*Genypterus blacodes*). pp 211-218. [labugoch@uchile.cl](mailto:labugoch@uchile.cl)

Changes in pH, total volatile basic nitrogen (TVB-N) and K-value were determined in golden kingclip species (*Genypterus blacodes*) frozen and stored at  $-18\text{ }^{\circ}\text{C}$  and  $-30\text{ }^{\circ}\text{C}$  for 6 months and golden kingclip canned fish in two different filling media. In frozen fish, pH values ranged from 6.4 to 6.8 and TVB-N varied from 8 to 14 mg of N/100 g. In canned fish, pH values varied from 6.5 to 7.0 and TVB-N from 9 to 22 mg of N/100 g. In frozen fish, the K-value was the most demanding index for determining freshness, namely, below 20%, while in canned fish it varied from 8% to 55%.

**Keywords:** golden kingclip, K-value, TVB-N, frozen fish, canned fish

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**FILIPOVIĆ, D., KASAPOVIĆ, J., PEJIĆ, S., NIĆIFOROVIĆ, A., PAJOVIĆ, S. B. & RADOJČIĆ, M. B.:** Superoxide dismutase activity in various fractions of full bovine milk. pp. 219-226. [marija@vin.bg.ac.yu](mailto:marija@vin.bg.ac.yu)

Specific composition, protein profiles and total SOD activity were analysed in full milk samples obtained from five farms of the Milk Company IMPAZ. The effects of several laboratory treatments on milk proteins by SDS-PAGE profiles and the respective SOD activity were also followed. The total SOD activity was detected in all full milk samples, and its values varied between 2 and 3 U  $\text{mg}^{-1}$  protein. The enzyme could be partially purified, up to  $\gg 5\text{ U mg}^{-1}$  protein, by ethanol extraction. The recovered SOD activity in ethanol extract was proportional to the initial full milk SOD activity. The disruption of casein micelles by  $\text{Ca}^{2+}$  removal was followed by a significant decrease in SOD activity to 1.24-0.18 U  $\text{mg}^{-1}$  protein. The loss of enzyme activity was ascribed to the changes in milk milieu induced by dissociation of casein micelles.

**Keywords:** full bovine milk, milk protein ethanol extraction, SOD activity

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**SASS-KISS, A. & HAJÓS, GY.:** Characteristic biogenic amine composition of tokaj aszú-wines. pp. 227-235. [a.sass@cfri.hu](mailto:a.sass@cfri.hu)

The biologically active amines of grapes, aszú-grapes, aszú-wines of Tokaj region were analysed to study the effect of *Botrytis cinerea* on the grapes. It was established that grapes contained mainly spermidine, putrescine, and spermine, however, in the aszú-grapes new amine compounds such as agmatine, phenethylamine, butylamine and pentylamine isomers appeared. The spermine content showed an increase in all aszú-grape varieties compared to the grapes. During winemaking processes, spermine disappeared and the concentration of

tyramine increased in the aszú-wines. The concentration of spermidine decreased during the ageing of the product. The ratio of tyramine and amine content of the samples were found to be within a limited interval.

**Keywords:** biogenic amines, wine, aszú-grape, aszú-wine, HPLC

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**KAROVIČOVÁ, J. & KOHAJDOVÁ, Z.:** Lactic acid fermentation of various vegetable juices. pp. 237-246. [jolana.karovicova@stuba.sk](mailto:jolana.karovicova@stuba.sk)

In recent years, great interest has been dedicated to vegetable juices processed by lactic acid fermentation, because they contain high amounts of beneficial substances such as vitamins, mineral compounds, dietary fibre and anticancer compounds. Six types of vegetable juices were inoculated by *Lactobacillus plantarum* 92H and fermented at 22 °C for 150 hours. On the basis of analytical (pH, total acidity, content of reducing sugars, organic acids and biogenic amines) and sensory tests results (evaluation of colour, turbidity, appearance, odour and taste), cabbage and cabbage-carrot (2:1, v/v) juices were selected as the most suitable for consumers. We recommend stopping the fermentation of these juices after 72 and 96 h of fermentation.

**Keywords:** fermentation, cabbage, carrot, celery, red beet, principal component analysis

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**BALOGH, T. & KOSÁRY, J.:** A preparative-scale synthesis of *O*-alkyl- $\beta$ -D-glucosides by enzymatic reverse hydrolysis. pp. 247-251. [judit.kosary@uni-corvinus.hu](mailto:judit.kosary@uni-corvinus.hu)

A preparative-scale synthesis of *O*-substituted  $\beta$ -D-glucopyranosides catalyzed by immobilized  $\beta$ -glucosidase in reverse hydrolytic reactions was attempted by using our novel reaction system. In this system the alcohols as solvents were replaced with organic solvents as diluting components. We found that not only 1,2-diacetoxyethane, but also triacetin is a suitable diluting solvent, because they can reduce the heterogeneity in the reverse hydrolytic reaction mixtures. Because of the high boiling point of the solvents, an extraction method was used for the isolation of products after reverse hydrolysis. This method resulted in higher yields (15-25%) than our original evaporation method (11-19%).

**Keywords:** immobilized  $\beta$ -glucosidase, reverse hydrolysis, *O*-glucosylation, 1,2-diacetoxyethane, triacetin

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**GONZÁLEZ-FANDOS, E., SANZ, J., GARCÍA-FERNÁNDEZ, M.C. & GARCÍA-ARIAS, M.T.:** Effectiveness of disinfectants used in the food industry on microorganisms of sanitary interest. pp. 253-258. [elena.gonzalez@daa.unirioja.es](mailto:elena.gonzalez@daa.unirioja.es)

The effectiveness of five commercial disinfectants used in the food industry was evaluated against different strains isolated from food borne outbreaks (*E. coli* O157:H7, *Salmonella* spp. and *L. monocytogenes*) and a collection strain (*S. aureus*) in an aqueous suspension medium. The disinfectants evaluated included quaternary ammonium compounds, aldehydes, hydrogen

peroxide and peracetic acid, clorhexidine and a tertiary alkylamine. In the absence of organic matter, all the disinfectants tested were effective with an exposure time of 10 min at the lowest concentration recommended by the manufacturer. However, in the presence of organic matter their effectiveness decreased. The most effective disinfectant against pathogenic bacteria tested was a quaternary ammonium compound based disinfectant combined with non-ionic surfactants, polyphosphates and alkaline salts. The least effective ones were disinfectants containing tertiary alkylamine, peracetic acid and hydrogen peroxide.

**Keywords:** disinfectants, pathogenic bacteria, food safety

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**TÓTH-MARKUS, M., SIDDIQUI S., KOVÁCS, E., RÓTH, E. & NÉMETH-SZERDAHELYI, E.:** Changes in flavour, cell wall degrading enzymes and ultrastructure of guava (*Psidium guajava* L.) during ripening. pp. 259-266. [m.toth@cfri.hu](mailto:m.toth@cfri.hu)

Volatile flavour substances were isolated from the minced pulp of half ripe and full ripe fruits of guava (*Psidium guajava* L.) cv. Lucknow-49 by simultaneous steam distillation extraction (SDE) with diethyl ether as extracting solvent. The concentrate was analysed by GC-MS. Acetic, butyric and hexanoic acids were the predominant acids, trans-2-hexenal+hexanal the predominant aldehydes and ethyl propanoate, methyl butyrate, ethyl butyrate, methyl hexanoate, ethyl hexanoate, cis-3-hexen-1-yl acetate, hexyl acetate, methyl benzoate, methyl octanoate, ethyl benzoate, phenylpropyl acetate and cinnamyl acetate, the esters responsible for the characteristic guava flavour were also present. The amount of total volatile substances was about 20% higher in full ripe fruits. The concentration of acids and most esters increased and that of C6 aldehydes decreased during ripening. The enzyme analysis showed that the polygalacturonase (PG) activity was lower in the ripe fruit, than in the half ripe one, while the b-galactosidase activity was not influenced by maturity stage. The surface and the cell walls of full ripe guava became wrinkled, and parenchyma cells were empty (SEM).

**Keywords:** guava, ripening, ultrastructure, volatile compounds, b-galactosidase, polygalacturonase

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**VARGA, J., TÓTH, B. & TÉREN, J.:** Mycotoxin producing fungi and mycotoxins in foods in Hungary in the period 1994-2002. Review. pp. 259-275. [jvarga@bio.u-szeged.hu](mailto:jvarga@bio.u-szeged.hu)

Our knowledge on the presence of mycotoxin producing fungi and mycotoxins in food commodities in the last decade in Hungary has been summarized in this review. Among the mycotoxin producing fungi, detailed data are available for *Fusarium* species in cereals, and mycotoxigenic *Aspergillus* species in different food commodities including coffee, raisins and spices. Ochratoxin concentrations above the tolerable limit have mostly been detected in imported products such as peanuts and coffee. Ochratoxin levels close to the tolerable limit have been observed in Hungarian red peppers. Besides, ochratoxin A has also been detected in Hungarian wine, beer and raisins. Aflatoxins are usually detected in considerable quantities only in imported agricultural products in Hungary, while patulin concentrations were usually below the allowable limit in Hungarian apple juice concentrates. In the future, continuous sampling and analysis of foods and feeds are required to ensure consumer safety in Hungary.

**Keywords:** aflatoxin, *Aspergillus*, fumonisin, *Fusarium*, ochratoxin, patulin, trichothecene

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**SLAČANAC, V., HARDI, J., ČURŽIK, D., PAVLOVIĆ, H. & JUKIĆ, M.:** Production of antibacterial organic acids during the fermentation of goat and cow milk with *Bifidobacterium longum* BB-46. pp. 277-285. [Vedran.Slacanac@ptfos.hr](mailto:Vedran.Slacanac@ptfos.hr)

This study was carried out to determine the intensity of production of acetic acid, short (SCFA) and medium (MCFA) chain fatty acids in cow and goat milk fermented by the use of *Bifidobacterium longum* Bb-46. Amounts of SCFA and MCFA in fermented goat and cow milk were determined by the use of GC/FID method. Concentration of acetic acid in the samples of fermented goat and cow milk were measured using GC/MS method. Furthermore, the growth rates of *Bifidobacterium longum* Bb-46 and its fermentation activity in goat and cow milk were also determined. Obtained results suggest higher metabolic activity of *Bifidobacterium longum* Bb-46 in goat than in cow milk. *Bifidobacterium longum* Bb-46 grew better in goat than in cow milk. Consequently, pH values decreased more rapidly during the fermentation of goat milk. Contents of all the examined SCFA and MCFA, as well as of acetic acid, increased more rapidly in goat milk during the whole fermentation process.

**Keywords:** acetic acid, *Bifidobacterium longum* Bb-46, fermented goat and cow milk, medium-chain fatty acids, short-chain fatty acids

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**Al-BACHIR, M. & ZEINO, R.:** The effect of gamma irradiation and grinding on the microbial load of dried licorice roots (*Glycyrrhiza glabra* L), and quality characteristics of their extract. pp. 287-294. [malbachir@aec.org.sy](mailto:malbachir@aec.org.sy)

Ground roots of licorice with 3 particle sizes (fine particles <0.35 mm, medium: 0.35-8.0 mm, and coarse particles >8.0 mm diameter) were exposed to 5, 10, 15 and 20 kGy of gamma radiation from a <sup>60</sup>Co source. Microbial population of ground roots and the characteristics of their extracts (concentrations of glycyrrhizic acid, total and inorganic dissolved solids), mineral ions (Ca<sup>++</sup> and K<sup>+</sup>), pH and EC values were evaluated after irradiation. The results showed that microbial count of fine particles of ground licorice roots were 10<sup>6</sup> g<sup>-1</sup>, that of coarse ones 10<sup>5</sup> g<sup>-1</sup>. The extract produced from coarse particles of ground roots had lower total and inorganic dissolved solids, mineral ions (Ca<sup>++</sup> and K<sup>+</sup>), pH and EC values compared with those produced from fine particular ones. All sizes of licorice roots treated with gamma irradiation had significantly (P<0.05) lower microorganism counts than untreated (control) ones. The dose needed to reduce the microbial load to less than 10 bacteria per gram was 15 kGy for the fine particle and 10 kGy for the coarse ground root. Gamma irradiation decreased glycyrrhizic acid concentrations in the extracts produced from coarse particle licorice roots.

**Keywords:** licorice, gamma irradiation, grinding, quality characteristics, microbial load, extract

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**SZYMKIEWICZ, A. & JĘDRYCHOWSKI, L.:** Reduction of immunoreactive properties of pea globulins as the result of enzymatic modification. pp. 295-306.  
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The possibilities of lowering the immunoreactive properties of hydrolysed pea globulins were examined in the presented work. The hydrolytic process with Alcalase, pepsin and trypsin was carried out at temperatures of 37 °C and 50 °C for 180 minutes. The highest degree of hydrolysis was obtained during hydrolysis with Alcalase (DH 25% at temperature of 50 °C). The highest reduction of immunoreactive properties of legumin and vicilin was observed after hydrolysis with trypsin (DH 12%) at 50 °C by 98% and 97.4%, respectively. Generally, the immunoreactivity of vicilin was reduced to a smaller extent than immunoreactivity of legumin during the hydrolysis processes analysed.

**Keywords:** enzymatic hydrolysis, pea globulins, immunoblotting, ELISA

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**WRÓBLEWSKA, B., JĘDRYCHOWSKI, L., SZABÓ, E. & HAJÓS, GY.:** The reduction of cow milk proteins immunoreactivity by two-step enzymatic hydrolysis. pp. 307-315. [basia@pan.olsztyn.pl](mailto:basia@pan.olsztyn.pl)

Commercial sodium caseinate isolate (SCI) was hydrolysed with either protease *Subtilisina carlsberg* – Alcalase 2.4 FG (purchased from Novo Nordisk), pronase from *Streptomyces griseus*, and papain EC 3.4.22.2 (both from Sigma) in a two-step process to determine the changes in the immunoreactivity of  $\alpha$ -,  $\beta$ - and  $\kappa$ -casein. Enzymatic hydrolysis of SCI was performed by pH-stat method. Hydrolysates were analysed using IEF, SDS-PAGE, 2D electrophoresis, FPLC-gel permeation chromatography. Immunoreactive properties of peptide fractions separated from the hydrolysates by FPLC were determined using dot-immunobinding and ELISA methods. The two-step process was observed to be effective in reduction of casein fractions immunoreactivity, however, allergenic epitopes were still present in all peptide fractions.

**Keywords:** enzymatic hydrolysis,  $\alpha$ -,  $\beta$ - and  $\kappa$ -casein, immunoreactivity, 2D electrophoresis, immunoassay

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**KALKAN YILDIRIM, H., YÜCEL, U., ELMACI, Y. OVA, G. & ALTUG, T.:** Interpretation of organic wine's flavour profile by multivariate statistical analysis, pp. 317-330. [hkalkan@food.ege.edu.tr](mailto:hkalkan@food.ege.edu.tr)

Organic wines produced by using organically cultivated grapes were evaluated using multivariate analysis and profiled by quantitative descriptive analysis. Trained judges rated the intensity of aroma and flavor descriptors. The statistical evaluation of the data demonstrated the close relation between Merlot and Cabernet sauvignon wines, considering their aroma descriptors and between Merlot and Carignan taking into account the taste descriptors. Significant differences between white wines were determined for sweet and bitter attributes and between red wines for sour, sweet, bitter, and astringency descriptors. The results of wine aroma characteristics demonstrated the following major descriptors for each wine type: *metallic* (Columbard); *grape juice, wet wood, vine leaf* (Semillon); *burned wood*

(Grenache); *dust, sour cherry, tobacco, yeast* (Cabernet sauvignon); *cork, unripe fruit, cinnamon* (Carignan); *grape molasses, dry plum* (Merlot). Flavor profile of organic wines revealed specific descriptors for each wine type, namely *raisin* (Columbard); *alcohol, rose, vine leaf, sulphur* (Semillon); *clove, salty* (Grenache); *flower, sour cherry, melon, cornelian cherry* (Cabernet sauvignon), *dry plum* (Carignan, Merlot).

**Keywords:** organic wine, sensory evaluation of wine

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**ALİŞARLI, M., ATASEVER, M. & GÖKMEN, M.:** Contamination of some vacuum-packaged meat products with *listeria monocytogenes* pp. 331-334. [malisarli@yyu.edu.tr](mailto:malisarli@yyu.edu.tr)

In this study, the contamination of vacuum-packaged processed meat products by *L. monocytogenes* was investigated in the samples collected from retail markets in Van, Turkey. Of the 100 samples studied, 44 (44%) were positive for *Listeria* spp., while 14 samples (14%) of *Listeria* spp. isolates were identified to be contaminated by *L. monocytogenes*. *Listeria* spp. and *L. monocytogenes* were detected in 60% and 20% of Turkish fermented sausage samples, 48% and 12% of sausage samples, 40% and 16% of salami samples, and 28% and 8% of pastirma samples, respectively. Because of high level of *L. monocytogenes* incidence in examined vacuum-packaged meat products, it is essential to make sure that all necessary sanitary requirements be met to avoid any contamination. It is concluded that inadequate cooking practices or raw consumption of these contaminated products may cause potential risks for public health.

**Keywords:** Turkish fermented sausage, sausage, salami, pastirma, *L. monocytogenes*