ACTA ALIMENTARIA
Abstracts: Vol 33. No. 3, 2004. September

Editorial: Szeitz-Szabó, M. and Farkas, J.: National food safety program of Hungary.
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Miklósy, É., Kalmár, Z. and Kerényi, Z.: Identification of some characteristic aroma compounds in noble rotted grape berries and aszú wines from Tokaj by GC-MS.
Pp. 215-226 miklosy.e@szbkik.hu

The present work compares volatile aroma components identified in dry base wines, young Aszú wines and noble rotted (aszú) grape berries from Tokaj wine district in Hungary. Volatile components were determined by GC-MS, for sample preparation liquid-liquid extraction was used. The greatest differences between the volatile components of Aszú and dry base wines were found in monoterpene alcohols, hydroxy-, oxo-, and dicarboxylic acid esters and lactones. Aszú wines contained lower relative amounts of terpene alcohols, while hydroxy-, oxo-, and dicarboxylic acid ester and lactone concentrations were found higher. Some lactones detected only in the Aszú wines were found in the noble rotted grape berries, too, so these compounds can play an important role in the unique and characteristic Aszú aroma.

Keywords: aroma compounds, wine, Tokaji Aszú, gas chromatography - mass spectrometry

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Dziuba, J., Niklewicz, M., Iwaniak, A., Darewicz, M. and Minkiewicz, P.: Bioinformtic-aided prediction for release possibilitites of bioactive peptides from plant proteins.
Pp. 227-235. jerzy.dziuba@uwm.edu.pl

Proteins apart from their basic functions may be the precursors of peptides with opioid, antihypertensive, immunomodulating, dipeptidyl peptidase inhibitors, antiamnestic, antithrombotic and other activities. Biopeptides as components of food with desired features become an interesting issue for scientific research. The bioinformatic-aided analysis of the distribution of biologically active fragments and bonds, which are predicted to be susceptible to the action of endopeptidases of known specificity, hydropathy index and prediction of secondary structures has been determined or carried out. The results indicated that wheat gliadins were the most susceptible for bioactive peptides release. These peptides showed antihypertensive, opioid and antioxidative effect, inhibition of dipeptidyl peptidase and were released by chymotrypsin, elastase, ficin and pepsin. The bioactive fragments predicted to be released by proteolytic enzymes as well as surroundings of such fragments were hydrophilic. The most frequently occurring structure of bioactive peptides from plant proteins was random coil. These findings suggested that the distribution of bioactive fragments could favour their release by proteinases.

Keywords: bioactive peptides, hydropathy index, proteins, proteolysis, secondary structure

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Berković, K., Kovač, S. and Vorkapić-Furač, J.: Natural compounds as environmentally friendly corrosion inhibitors of aluminium.
Pp. 237-247. spomenka.kovac@ptfos.hr

The compounds of interest in the present study were the natural compounds rutin and quercetin, which are strong antioxidants and have beneficial effects on human health (MYAKE & SHIBAMOTO, 1997). They are present in everyday foods and beverages and in this way they are used as an integral part of human diet. Therefore, it seemed interesting to investigate the influence of these valuable natural compounds on corrosion processes of aluminium, an ambalage material often used in food industry (JOVANOVIĆ et al., 1994).
All the investigations were performed in 3% solution of sodium chloride, in aqueous rutin and quercetin solutions as well as in rutin and quercetin solutions in 3% sodium chloride solution. Concentrations of rutin and quercetin solutions used ranged from 10-2 to 10-5 mol dm-3, and investigations involved electrochemical methods.
The results obtained showed that rutin and quercetin previously dissolved in 0.1M NaOH and added to the 3% sodium chloride solution at concentrations of 10-4 and 10-5 mol dm-3 acted as aluminium corrosion inhibitors, while at higher concentrations (10-2 and 10-3 mol dm-3) their effects were opposite.
The efficiency of the corrosion inhibition of aluminium by rutin and quercetin solutions was the result of forming the protective film at the metal surface. Therefore, the diluted rutin and quercetin solutions could be used as corrosion inhibitors of aluminium.

Keywords: aluminium, corrosion inhibition, rutin, quercetin

Sağir, A. and Yildiz, A.: Growth of mycelium of Pleurotus spp. on different grains and determination of their competition with some contaminant fungi.
Pp. 249-257. asagir@dicle.edu.tr

Five mushroom species, P. ostreatus, P. ostreatus var. salignus, P. eryngii, P. florida, P. sajor-caju, three contaminant fungi A. niger, P. italicum, R. stonolifera, and barley, sorghum and wheat grains were used in the study. The purpose of this work was to determine mycelia growth of Pleurotus spp. and their competition with contaminant fungi.
The Pleurotus spp. were grown better on the sorghum grains than the barley and wheat grains according to mycelial growth and density. The colony growth of Pleurotus spp. was inhibited by A. niger, P. italicum and R. stonolifera by 13.84%, -1.58% and 24.48%; 9.84%, 20.31% and 18.06%; 14.48%, 100.00% and 100.00% on the 3rd, 5th and 7th days after inoculation, respectively. The mushrooms were completely suppressed by R. stonolifera on the 5th day.

Keywords: Pleurotus spp .growth, contaminant fungi, inhibition, Aspergillus niger, Penicicillum italicum, Rhizopus stonolifera

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Bene, Zs and Magyar, I.: Characterization of yeast and mould biota of botrytized grapes in Tokaj wine region in the years 2000 and 2001.
Pp. 259-267. magyari@omega.kee.hu

The most important base material of the famous wine Tokaji Aszú is the noble rotted grapes attacked by Botrytis cinerea under special conditions. The objective of this study was to determine the quantitative and qualitative composition of the yeast and mould biota present on the surface of aszú-berries in the year of 2000 and 2001, and to compare these findings with the observations made in previous vintages. The studied years represented extremely different conditions for the noble rot, so the effect of the vintage on the quantitative and qualitative

composition of the microflora was more pronounced than in the earlier years. The excellent year of 2000 resulted in yeast and mould counts (mean logarithmic values of 4.47 and 4.72) significantly lower than found in the extremely poor vintage of 2001 (mean values of 6.58 for yeasts and 7.10 for total moulds). The place of sampling (vineyard or winery) had less impact on the quantitative composition of the microbiota than found previous, less extreme years. The results of qualitative analysis, however, confirmed that the taxonomic composition of the yeast biota depends on the place of sampling, showing that the storage conditions of aszú grapes before vinification should be studied and optimized.

Keywords: Botrytis, noble rot, Tokaji, yeast

Kośla, T., Skibniewski, M., Skibniewska, E., and Urbańska– Słomka, G.: The zinc status in free living european bisons.
Pp. 269-273. kosla@alpha.sggw.waw.pl

The aim of the present investigation is the determination of zinc content in the organism of European free-living bison in the Białowieża Forest, Poland.
Samples of liver, kidney, ribs, muscle and hair were collected in winter 2002 during sanitary shots. Samples were mineralized in a microwave apparatus, and zinc contents were determined by the ICP-OES method.
Comparing the least significant differences between groups, higher zinc contents were observed in the liver of males and older animals. In the kidney higher zinc contents were found in older animals and in the rib, hair and muscle the level of zinc did not differ depending on sex. In the rib and hair no statistically significant differences depending on age were observed.

Keywords: zinc, European bison, sex, age

Šimundić, B., Krešić, G., Živković, A. and Međugorac, B.: Pesticide residues in fruits and vegetables from Croatian market.
Pp. 257-284. Greta.Kresic@hika.hr

Pesticides are used with the aim to control insects, diseases, fungi and other pests. Along with the benefits, there are potential effects from trace amounts of residues remaining on fruits and vegetables. The objective of this study was to check for compliance with the maximum residue levels in fruits and vegetables from Kvarner region of Croatia. Fourteen sorts of vegetables and 6 sorts of fruits (n=263), randomly selected from market, were analysed for organochlorine, organophosphorus and fungicide residues. Multi residue analysis using GC/NPD, GC/ECD and spectrophotometric methods were applied. The results of this study indicated that though all the commodities were contaminated with pesticides, the levels were low and residues above MRL were found only in 1.52 % of samples. All other levels were below the criteria for maximum residue limits established by Croatia and the EU.

Keywords: pesticide residues, fruits, vegetables

Kovács, E. and Merész, P.: The effect of harvesting time on the biochemical and ultrastructural changes in Idared apple.
Pp. 285-296. e.kovacs@cfri.hu

Apples were harvested at three different times (1st, 2nd and 3rd) then stored at 1-3 oC, 85-90%RH for 5 months. Firmness, ethylene productivity, the distribution of calcium and potassium and the ion leakage were measured. The ultrastructure of the cell wall was studied by SEM and TEM and he activity of b-galactosidase and polygalacturonase and pectin content were determined. The ethylene evolution of fruits decreased by the harvest and storage time. At the beginning of storage, the ethylene productivity in the 1st harvest apple increased up to a maximum value then declined. The 2nd harvest fruits produced less ethylene than that observed in 1st harvest fruits. No ethylene production was found in the 3rd harvest fruits. Firmness was different according to harvest time, but that difference disappeared during storage. The permeability of membranes increased as a function of harvests and storage. The distribution of calcium was typical at the beginning, the highest concentration of calcium being near the core and skin, but by the end of the storage calcium moved from the skin towards the core. Potassium content was the highest near the core and decreased towards the skin, both in the fresh and stored apples. The activities of polygalacturonase and b-galactosidase were not influenced by the harvest time, but changed as a function of storage time. The autolysis of pectin and soluble carbohydrates increased during storage, mostly in the 3rd harvest. At the beginning of storage, the cell wall and middle lamellae of the 1st harvest fruits' flesh were not damaged. Large degradation of the middle lamellae was observed in the 2nd and 3rd harvest fruits. Lower membrane permeability, pectin degradation and PG enzyme activity were found in the 1st harvest apples. The Idared apple should be harvested close to the climacteric maximum for better and longer storage.

Keywords: apple, pectin, ultrastructure, b-galactosidase, polygalacturonase, membrane permeability, calcium/potassium

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Vetter, J., and Lelley, J.: Selenium level of the cultivated mushroom Agaricus bisporus.
Pp. 297-301. jvetter@univet.hu

Selenium intake of the human population is very distinct and depends on the Se-content of consumed food. The higher intake of selenium can decrease the risk of many health problems in human and animal organisms. The main task of this work was to obtain new comparable data on Se content of Agaricus bisporus mushroom. The selenium content of different, common varieties of Agaricus bisporus and of its three cultivation's flushes was determined. The Se content of varieties varies between 0.46 mgkg-1 D.M. and 5.63 mg kg-1 D.M., and the average content is 2.82 (±1.48) mg kg-1 D.M. The caps of fruit bodies have always higher selenium content than the stipe. The average cap/stipe selenium ratio is 1.29. The changes of Se concentration during the cultivation (in cultivation's flushes) are not significant. The most important cultivated mushroom species of the world (Agaricus bisporus) has, in addition to other more valuable properties, a remarkable Se-content. Consumption of fruit bodies can improve the Se supply of human organism, i.e. some health risks can be decreased.

Keywords: selenium content, Agaricus bisporus varieties, caps, stipes

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Juśkiewicz, J., Zduńczyk, Z., Klewicki, R. and Gomez-Villalva, E.: Physiological effects of dietary inulin, xylitol and b-galactosyl-derivatives of sugar alcohols in rat.
Pp.303-311. glebczo@pan.olsztyn.pl

Rats were fed for 4 weeks with diets containing 5% sucrose or the following preparations: inulin, xylitol or β-galactosyl-derivatives of polyol (β-galactosyl-xylitol, -sorbitol, -erythritol). Except for β-galactosyl-erythritol, all preparations caused an enlargement of caecum weight (tissue: 0.41-0.51, digesta: 1.28-1.80 g/100 g BW), compared to the control group (0.28 and 1.00, respectively). The control caecal pH was close to 7.0, while in the experimental groups it ranged from 6.45 (xylitol) to 6.84 (β-galactosyl-erythritol). The caecal ammonia concentration was the lowest in the inulin group (0.45 mg g-1) and the highest in β-galactosyl-sorbitol group (0.62). All preparations decreased the β-glucuronidase activity in the caecal digesta (0.59-0.81 U g-1) compared to rats fed sucrose-diet (1.00). The highest concentration of SCFAs in the caecum was in inulin and β-galactosyl-erythritol groups (68.57 and 68.36 mmol g-1), and the lowest one - with xylitol (52.41). The total production of SCFAs in the caecum (mmol/100 g BW) was the lowest in the control group (64.8).

Keywords: inulin, polyols, caecum, enzyme activity, short-chain fatty acids, rats

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Lőrincz, A.: Effectiveness of ultrasonic cell disruption as a function of the suspension concentration.
Pp. 313-323 lorincza@mtk.nyme.hu

Our goal was to explore the interactions between the acoustic phenomena taking place in the ultrasound field, the concentration of the biological particles of the ultrasound field, and the cell biology effects of these interactions. Using output power of 9 W cm-2 and frequency of 1.117 MHz, the concentration was determined, expressed in g l-1, of lyophilized Saccharomyces cerevisiae baker's yeast needed for stopping cavitation in the sound field. Then by using multiples of the aforementioned concentration, we monitored the acoustic phenomena occurred in the sound field and, simultaneously, we examined the survival dynamics of the cells. Examined acoustic phenomena were the following: acoustic streaming, standing wave, and cavitation. Physical parameters (suspension density, dissolved oxygen, temperature) of the sound field had essential effect on the acoustic phenomena formed in the ultrasound field and on the threshold levels of their formation. The phenomena affected the composition of the material in the sound field, so an acoustical phenomenon – cell biological effect chain reaction took place during the radiation.

Keywords: acoustic phenomenon, Saccharomyces cerevisiae, D and k values, ultrasound field

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Arici, M., Daglioglu, O., Gumus, T. and Daglioglu, F.: Occurence of fumonisin in processed and low processed corn-based products in Turkey.
Pp. 325-328. marici@tu.tzf.edu.tr

A total of 92 corn-based food products consisting of 53 low-processed and 39 processed samples were collected at random from retail markets and bazaars in various provinces of Turkey and analysed for total fumonisin levels. Twenty-one (40%) low-processed and nine (23%) processed samples were found to contain fumonisin. Total fumonisin contamination in

the low-processed products ranged from 0.8 to 273 mg kg-1, and in the processed products from 0.3 to 76.8 mg kg-1. Considering all 92 samples, the highest frequency of detection and the highest concentrations (in flour samples up to 273 mg kg-1) were detected in low-processed products. These results indicated the natural contamination of corn-based low-processed and processed food products for human consumption in Turkey by fumonisins.

Keywords: fumonisin, corn products, low-processed, processed