

Editorial: RASPOR, P.: Faces of foods on the world of food systems. pp. 247-249.
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HORVÁTH-ALMÁSSY, K. & BARA-HERCZEGH, O.: Assessment of fatty goose liver grade by texture analysis. Pp. 363-372, hak@szef.u-szeged.hu

A new objective texture test method was developed and compared with the goose liver manual grading system. The whole fatty goose livers were purchased from Bábolna Holdings and were examined at two stages: in the preliminary test three times 3 pieces were taken, while in the main test five times 22 pieces. All of them were examined both at a pre-cooled stage and after a 24-hour storage on ice. The texture analyses were made by QTS 25 texture test system immediately after the manual grading. A special probe with three needles was developed for the Texture Analyser. Most of the texture parameters correlated significantly with the liver grades, as shown by statistical evaluation of the data. The best quality assessment was made by a binary equation where the hardness value and the mass of the product were the independent variables.

Keywords: Fatty goose liver, grading, texture analysis, penetration, force-time curve, hardness

MACIEJEWSKA, M., MIKLÓSY, É. & BÁLÓ, B.: Wine differentiation of vineyard management regimes. Pp. 373-384, monika.maciejewska@pwr.wroc.pl

The possibility of discrimination between wines was examined based on different vineyard management regimes as a potential source of differences in wine quality. The analysis covered three years in a Chardonnay vineyard, where different irrigation and fertigation regimes were applied. The basis for wines differentiation was measurements of selected volatile organic compounds in wines (GC-MS) and wine sensory assessment with 20-point wine quality scale. It was shown that wine differentiation could be successfully performed based on measurements of selected volatile alcohols and esters in wine with the application of Discriminant Function Analysis (DFA). Also, sensorial assessment could provide for some wine differentiation between vineyard treatment regimes. Both approaches, the instrumental and sensorial, could be successful in wine discrimination, provided single vintage is considered.

Keywords: wine discrimination, Chardonnay, sensory assessment, GC-MS, vineyard irrigation, vineyard fertigation

LUGASI, A., NESZLÉNYI, K., HÓVÁRI, J., LEBOVICS, K.V., HERMÁN, A., ÁCS,

T., GUNDEL, J. & BODÓ, I.: Dietary manipulation of meat fatty acid composition in Hungarian mangalica and an industrial genotype pig. Pp. 385-395, lugasi@oeti.antsz.hu

Fat content and fatty acid composition were investigated in *musculus gluteus medius* of pigs from two different breeds: traditional Hungarian Mangalica and a crossbreed of Hungarian Large White and Dutch Landrace. Animals of both varieties were divided into two groups and were kept individually on control or experimental mixtures of feeds. Experimental feed contained significantly higher amount of linoleic and linolenic acid than the control one. Significantly higher fat content was detected in meat of Mangalica pigs kept on both feed mixtures than in those of crossbred. The proportion of saturated fatty acids was nearly the same in the meat of both genotypes. More monounsaturated fatty acids were detected in Mangalica meat than in crossbred ones expressed in percent of total fatty acids and absolute amount, as well. As a result of experimental diet, percentage and absolute amount of oleic acid decreased significantly in both genotypes. Less polyunsaturated fatty acids expressed as percent of total acids were observed in the muscle of Mangalica than in those of crossbred ones. Absolute amount and the proportion of total polyunsaturated fatty acids (especially linoleic and linolenic acids) increased significantly as a result experimental diets. The ratio of n-6 and n-3 fatty acids changed beneficially in both genotypes consuming a diet containing 20% full-fat soy from 13.6:1 to 10.0:1 in Mangalica and from 15.4:1 to 10.3:1 in crossbred genotype. According to present results, it has become clear that the fatty acid composition of the meat of the traditional Hungarian Mangalica can be successfully modified by the diet, and this manipulation can make the meat healthier in spite of its high fat content.

Keywords: Hungarian Mangalica, feeding pattern, *gluteus medius*, fatty acid composition

NINČEVIĆ, A., PEZZANI, A. & SQUITIERI, G.: Characterization of different types of lacquers used in food packaging: Porosity, flexibility and IR reflectance spectroscopy tests. Pp. 397-407, aninc@pbf.hr

UV-cured (ultra violet), water-based and epoxyphenolic lacquers have been characterized as coatings for possible application in vegetable canning industry. These lacquers were applied to three different types of tins and tin free steel (TFS). The behaviour of lacquers was monitored applying porosity, flexibility and infrared (IR) reflectance spectroscopy tests. With IR reflectance spectroscopy test, we were able to determine the composition of lacquers. Using porosity and flexibility tests, performed by electrochemical methods, it was possible to characterize the best lacquer for food canning. In this work the variables involved in lacquering, e.g. the weight of coating and the degree of polymerization of lacquers were also taken into account.

Keywords: tins, TFS, food packaging, lacquer porosity, lacquer flexibility, IR reflectance spectroscopy

NANDA, V., KAUR, A., BERA, M.B., SINGH, B. & BAKHSHI, A.K. Palynological studies and application of response surface methodology to establish the quality attributes in *Eucalyptus* honey. Pp. 409-422, vik164@yahoo.co.in

In this study honey samples of Eucalyptus honey (*Eucalyptus lanceolatus*) were botanically characterized. Response surface methodology was used to analyze the effect of temperature, time and pH on the quality responses (hydroxymethylfurfural concentration and diastatic activity) of Eucalyptus honey. A central-composite rotatable design was used to develop models for the responses. At the central value of time (10 min), the maximum concentration of hydroxymethylfurfural was demonstrated at the highest temperature and pH. The maximum value of hydroxymethylfurfural concentration was also obtained at the maximum time and temperature, while keeping the pH at the central value of 5.3. Diastatic activity decreased as the pH moved away from the central pH value of 5.3 to 5.6 at any level of temperature and time. Three-dimensional response surfaces were superimposed, and the overlapping regions gave the diastatic activity (calculated as diastase number 9 to 23.09 °G) and hydroxymethylfurfural concentration (3 to 10.21 mg kg⁻¹) at 48±1°C for 9.5±1 min at 5.15±0.15 pH.

Keywords: eucalyptus honey, diastatic activity, hydroxymethylfurfural, optimisation,

BARANYAI, L.: Classification of seed grains on the basis of their surface pattern. pp: 423-434, laszlo.baranyai@uni-corvinus.hu

Classification of valuable seeds and identification of foreign materials are very important in optimisation of cleaning process and plant development. Digital image processing was applied to measure statistical parameters of surface patterns, such as mean entropy, angular second momentum and contrast. In addition, polar quality points of histograms of intensity differences were also computed. A distance function of dimensionless quantity was introduced and applied in classification. Distances were calculated from average value and standard deviation of parameters. Advantages of this method are the easy calculation and assignment of probabilities to distance values. Not only the grey level differences were collected, the method was extended to colour signals (red, green and blue) as well. Analysis of colour information improved effectiveness of classification.

Keywords: digital image processing, surface pattern, seed grains, PQS

GIUFFRIDA, D., ZIINO, M., VERZERA, A., CONDURSO, C. & ROMEO, V.: Biogenic amines in a typical “pasta filata” Italian cheese. Pp. 435-443, giuffrid@isengard.unime.it

The biogenic amine content of “Provola dei Nebrodi”, a typical “pasta filata” Sicilian cheese, was studied at different ripening stages. Reversed-phase high performance liquid chromatography (RP-HPLC) with fluorimetric detection was employed for the identification and quantification of eight different amines: ethanolamine, histamine, serotonin, tyramine, tryptamine, 2-phenylethylamine, putrescine and cadaverine. Histamine was the most representative amine in all the analysed cheese samples, followed by serotonin and tyramine. The total amount of biogenic amines was lower than 0.1 ppm in fresh samples, whereas it reached 33.57 ppm in samples with the longest ripening time. The biogenic amine contents were correlated with the proteolytic maturation coefficient, defined as the water-soluble nitrogen/total nitrogen (WSN/TN %) percent ratio. The results showed amine contents lower than the toxic level even for samples with the longest ripening time.

Keywords: biogenic amines, Provola dei Nebrodi, “pasta filata” Italian cheese, ripening

VÁLI, L., FÉBEL, H., STEFANOVITS-BÁNYAI, É., SÁRDI, É., LUGASI, A., SZENTMIHÁLYI, K. & BLÁZOVICS, A.: Duodenum protecting effects of table beet (*Beta vulgaris* L. ssp. *esculenta* var. *rubra*) during hepatic ischemia-reperfusion. Pp. 445-453, blaz@bel2.sote.hu

Dietary intake of polyphenols and vitamins before surgery may have beneficial effect on survival of the patients. Table beet (*Beta vulgaris* L. var. *rubra*) contains bioactive agents, which have a wide range of different physiologic effects. These agents have beneficial antioxidant properties. The aim in the present study was to determine the gut protecting properties of bioactive substances of table beet in a model of ischaemic-reperfusion injury of the rat liver. Chemiluminescent intensity, H-donating ability, reducing power and free SH-group concentration were determined by luminometry and spectrophotometry in duodenum and plasma. Lyophilized table beet increased significantly the free radical scavenging property of the plasma measured by chemiluminometry. Other antioxidant parameters of the plasma increased in rats fed table beet diet, and change in reducing power was significant. Beneficial effect of the treatment was found in changes of total scavenger capacity of the duodenum during ischaemia-reperfusion injury. H-donating ability and reducing power of the gut decreased in the table beet-fed group during ischaemia-reperfusion compared to normal group with ischaemia-reperfusion. Based on these data, it can be concluded that table beet can protect the entire body from the oxidative damage caused by ischaemia-reperfusion of the liver, but the effect of table beet treatment on gut mucosa needs further investigation.

Keywords: redox homeostasis, duodenum, free radicals, ischaemia-reperfusion, table beet

LOCSMÁNDI, L., KÖVÉR, G., BÁZÁR, G., SZABÓ, A & ROMVÁRI, R.: Development of a model using near-infrared reflectance spectroscopy for the determination of the chemical composition of fatty goose liver. Pp. 455-463, romvari.robert@freemail.hu

The feasibility of NIR spectroscopy for determining chemical composition of goose fatty liver was studied. The spectra of 50 fresh, homogenized liver samples (ether extract content EE=53.2, SD=4.87%) were taken between 1100 and 2500 nm in reflectance mode, then the chemical composition and the fatty acid profile was measured (gas chromatography). Calibration equations were developed using modified partial least-squares regression. The R² value in estimation of DM, CP and total EE were 0.72, 0.63 and 0.81, respectively. For the major fatty acids (oleic, palmitic and stearic acid, 51.4, 25.8 and 15.5% of total) the R² values were 0.94, 0.93 and 0.16. The estimation of the total saturated fatty acid (SAT) proportion and the so-called unsaturation index (UI) value was effective (R²=0.81 and 0.79, respectively). The paper demonstrates the usefulness of the NIRS method as a fast and solvent free alternative of liver qualification. For practical purposes a larger number of fatty liver samples are needed.

Keywords: fatty liver, NIRS, chemical composition, fatty acids

ORBÁN, N., KISS, A., DRÁVUCZ, M., GÁL, L. & ORBÁN, S.: Comparative study on selected polyphenol content in red wines of Eger (Hungary). Pp. 465-477, ttnorbi@primposta.com

Nine phenolic compounds (gallic acid, (+)catechin, vanillic and caffeic acid, p-coumaric acid, resveratrol, myricetin, quercitrin, and quercetin) of fourteen Eger (Hungarian) young red wines were investigated using high-performance liquid chromatography in order to obtain data on the 2003 vintage. The grapes were harvested at different sites of the wine-district, vinified with same technology, but stored under different conditions (glass holder or 5-10 years old oak barrel). Same varietal wines originating from different sites of Eger wine-region showed considerable alterations in some phenolic components, and we found distinction in polyphenol content of different varietal wines originating from the same harvesting site. Cluster analysis was performed to acquire information about the similarity among the measured wines. Our study provides new data of polyphenol composition for Eger (Hungary) pure varietal red wines, and the results contribute to better identification of Hungarian red wines on the basis of geographical location.

Keywords: Hungarian wines, polyphenols, HPLC, Eger wine-district

RURIK, I.: Do our elderly diabetic patients keep the diet? Primary care evaluation from Hungary. Pp. 479-486, rurik.dr@axelero.hu or imre@rurik.eu

The medical nutritional therapy has high importance in the management of diabetes mellitus. The aim of this study was to collect information on how the diabetic elderly follow medical advices regarding nutrition. A population of 291 persons were selected consecutively from primary care patients in Hungary. Ninety-five type 2 diabetes patients were compared to 196 non-diabetics, focusing on nutritional habits, life style elements and anthropological parameters.

The diabetics were mainly overweight or obese with low education levels. People with higher BMI have eaten less frequently than people in the normal BMI (Body Mass Index) range. The daily food frequency of diabetics was higher only on weekends and holidays. There were only minimal differences concerning food choices as well. The differences in the diet proved smaller than expected and recommended. The time spent with physical activity was low in general, especially among diabetics. The self-judgement showed that only 49% of diabetics kept their eating habit as healthy, vs. 63% of non-diabetics. The food choices were also modified by the economic situations of patients. It was observed that the majority of elderly diabetics did not pay enough attention to correct diabetic diet, therefore, they should be controlled more effectively by primary care staff.

Keywords: diabetes, diet, medical nutritional therapy, elderly, primary care

SAGDIC, O., AKSOY, A. & OZKAN, G.: Evaluation of the antibacterial and antioxidant potentials of cranberry (gilaburu, *Viburnum opulus* L.) fruit extract. Pp. 487-492, osagdic@erciyes.edu.tr

In this study, the antibacterial and antioxidant activities of dried fruit extract of cranberry (gilaburu, *Viburnum opulus*) were determined. The total phenolic content was found to be 131.992 ± 11 mg gallic acid equivalent (GAE) g⁻¹ the cranberry fruit extract (CFE). The antioxidant activity of the extract was found to be 315.50 ± 8.2 mg g⁻¹ dried methanol extract. At 2, 5, 10 and 15% concentrations the extracts were tested for their antibacterial effects by using the agar diffusion method against ten bacteria, some of them pathogenic and some of them spoilage microorganisms. All bacteria were inhibited by 10 and 15% concentrations of the CFE. Methanol (control) had no inhibitory effect on all the tested bacteria. The most sensitive of the bacteria was *A. hydrophila*, whereas the most resistant bacterium was *Y. enterocolitica*.

Keywords: *Viburnum opulus* L., cranberry, gilaburu, antimicrobial, antioxidant

EMEKANDOKO, A., HORTI, K. & SÁRAY, T.: Chances of keeping quality of fresh, raw, early potatoes, with special regard to storage in controlled atmosphere. Pp. 493-500, tamas.saray@uni-corvinus.hu

Due to their relatively rapid spoiling, most of the premature vegetable varieties are left out of consideration for extended refrigerated storage. In this paper the authors studied the impact of extended storage (42 and 62 days) on maintaining quality of the well-known and popular premature potato variety “Cleopatra”. The tubers were stored with (8°C) and without refrigeration (18°C) in regular and controlled atmosphere (CA) (12% O₂ + 2% CO₂ + 86% N₂). The results are based on samples harvested in two following seasons.

Best suited for the market are the potatoes that have been stored under refrigeration in a controlled atmosphere. Regarding colour and firmness of the tubers, no considerable changes were found. Neither is there a substantial change in the starch or sugar content. The minor decrease in flavour intensity and aroma suggests that the gas-composition of the atmosphere has to be refined and length of storage period has to be determined more precisely. Other varieties could be included in the investigations in the future.

Keyword: early potato, CA-storage, keeping quality