

Lakner. Z: Turning the Rubik's cube: socio-economic modernisation. life quality, competitiveness and food research. Editorial. Pp. 409-413. zoltan.lakner@uni-corvinus.hu

Kovács. E, Kristóf. Z, Perlaki. Z and Szöllősi, D: Cell wall metabolism during ripening and storage of nonclimacteric sour cherry (*Prunus cerasus* L., cv. Kántorjánosi). Pp. 415-426. etelka.kovacs@uni-corvinus.hu

Ripeness: The colour of green (ripeness stage I), pit hardening (II), light red (a, b) (III, IV), red (V) and dark red (VI) sour cherry fruits (*Prunus cerasus* cv. Kántorjánosi) were characterised by CIELAB L*, a* and b* values. L* and b* decreased as a function of ripeness, a* intensively increased between green (I) and pit hardening (II) stages. The cell wall of green fruit was intact, but the electron dense cytoplasm concentrated along the cell wall and showed a number of degradation signs. The pit hardening stage (II) resulted in more structural break down in the cytoplasm and in the cell wall. Large numbers of plastoglobuli were in the plastids resulting in chloroplast-gerontoplast conformation. The most striking feature of light red fruits is the dissolution of the walls. Middle lamellae almost completely disappeared. In ripe fruits, the wall degradation was even more prominent. The regular structure of the cytoplasm had almost completely disappeared. The total pectin content between pit hardening and light red stages was the highest. The autolysis of pectin increased between pit hardening (II) and light red-a stage (III), then it slowly decreased. The largest activity of B-galactosidase was in the green (I) stage, and then in the pit hardening stage (II) it suddenly decreased. In light red-a/b (III/IV) stages the activity of B-galactosidase again started to increase. The activity of polygalacturonase did not depend on the grade of ripeness. Storage: In the first period of storage, the activity of B-galactosidase and polygalacturonase of sour cherry decreased, then in the second period of storage increased.

Keywords: sour cherry, cell wall, B-galactosidase, polygalacturonase, ultrastructure

Helyes. L, Pék. Z and Lugasi, A: Function of the variety technological traits and growing conditions on fruit components of tomato (*Lycopersicon lycopersicum* L. Karsten). Pp. 427-436. lugasi.andrea@oeti.antsz.hu

Tomato quality factors such as size, firmness, colour, taste, and nutritional content are important criteria for marketing of tomato fruit. The aim of present study was to evaluate the effects of different types of varieties and cultivation technologies (forcing, open-field with supporting system, open-field with processing varieties) on the ingredient content of tomato fruit. The soluble solids (Brix°), carbohydrate, organic acid, lycopene and ascorbic acid contents were measured. Average soluble solids content ranged from 5.2 to 8.7%. The highest Brix° was observed in the fruits of a cherry type tomato, namely Favorita (8.7%). Carbohydrate content constitutes nearly 50% of the Brix°. The highest carbohydrate content was observed for Favorita and Cheresita (both cherry type tomatoes), whereas the lowest was detected in Falcorosso, a processing variety. Low acid content was found in Nívó and Delphine F1 cultivars (processing and eating variety, respectively). The sugar-acid ratio was 40% higher in the case of cherry type tomatoes than in the other varieties. Average lycopene content of examined tomato varieties turned out to be extremely diverse (48 134 mg kg⁻¹). Ascorbic acid levels did not differ so much, ranging from 226 to 381 mg kg⁻¹. In case of

open-field cultivation with supporting system, cherry type varieties showed significantly higher Brix° and carbohydrate content than those of round tomato type with average fruit weight of 100-130 g. All varieties examined produced significantly higher organic acid content in forcing as compared to the values of round tomato varieties cultivated in open-field with supporting system and processing varieties. Lycopene content of tomato fruits from greenhouse was higher than that of fruits from field. Processing varieties yielded significantly higher lycopene content than the others.

Keywords: tomato, Brix°, carbohydrate, organic acid, lycopene, ascorbic acid

Jevšnik, M, Hlebec, V and Raspor, P: Consumer interpretation of the term food safety. Pp. 437-448. peter.raspor@bf.uni-lj.si.

The meaning of the term “food safety” is well-known and defined in expert circles. But in researching how the term is interpreted by consumers, new dimensions are opening, which can be used as a guide in preparation of educational material for consumers. In the paper the authors analyse statements made by consumers when answering the question, “How do you interpret the term food safety?” The results are part of an extensive research titled “Consumers and Food Safety”, which took place from January to March in 2006 involving 1030 respondents from different places in Slovenia. Findings of quota sample show considerable terminological diversity among statements made by respondents regarding a description of the term “safe food”. Based upon the code assignment, five single-meaning thematic categories were identified: A: Harmless for health, B: Healthy food, C: Production method, D: Technological procedure, E: Surveillance. The answers with extensive content included more one-theme categories and were classified in category F. This category indicates the complex comprehension of the term food safety and the need to understand the relations between the answers. The results show a connection between 38.4% of consumers' statements in category A, (harmless for health), and a definition of food safety which mentions the term “without hazards”.

Keywords: Consumer, Food safety, Qualitative content analysis

Dvaranauskaitė, A, Venskutonis, P, R a and Labokas, J: Comparison of quercetin derivatives in ethanolic extracts of red raspberry (*rubus idaeus* l.) Leaves. Pp. 449-461. rimas.venskutonis@ktu.lt

Ethanol extracts from 41 raspberry leaf accessions were studied. The plants of *Rubus idaeus* L. were collected in different natural habitats of Lithuania located in 26 districts and replanted in the experimental field of the Institute of Botany, Lithuania. The total amount of phenolic compounds in leaves varied from 0.3 to 2.2 mg of gallic acid equivalents (GAE) in 1 g of dry leaves. Quercetin glucuronide, quercetin-3-glucoside and quercetin glucosylrhamnoside (rutin) were identified in the extracts by HPLC/UV/MS. Remarkable differences in the composition of the extracts were observed indicating that herbal tea preparations containing *Rubus idaeus* leaves, which are used for phytotherapeutic purposes need more detailed examination in order to standardise their possible functional properties and pharmacological effects.

Keywords: *Rubus idaeus*; leaves; total phenolics, quercetin derivatives

Kosáry, J, Hitka, G, Kápolna, B and Radva, D: Studies of biochemical parameters characteristic of oxidative damage in different apple cultivars (*malus domestica* borkh.) During storage. 463-470. judit.kosary@uni.corvinus.hu

Biochemical parameters, characteristic of oxidative damage (POX and PPO activity, FRAP value and TP content) were used to study the prolonged storage of novel apple cultivars resistant to several apple tree diseases (Re-apples). In Period I., results of apples stored from September to November and from September to December were compared. In Period II., results of apples stored from September to December and from September to April were compared. In Period I., significant increase in the activity of peroxidase and polyphenoloxidase enzymes, slight increase in total phenol content and slight decrease in FRAP values were detected. In Period II., the parameter values decreased. No direct correlations were found between the measured biochemical parameters and the keeping of quality during the prolonged storage, therefore additional comparative studies are needed.

Keywords: Re-apples; storage; peroxidase; polyphenoloxidase; total phenol content; FRAP; stress

Lešnik, M, Cencič, A, Vajs, S and Simončič, A: Milling and bread baking techniques significantly affect the mycotoxin (deoxynivalenol and nivalenol) level in bread. Pp. 471-483. mario.lesnik@uni-mb.si

The influence of three milling techniques (MT1: industrial roller-grinder, MT2: grain hammer crusher, and MT3: traditional millstone) and two baking methods (BM1: industrial oven, BM2: traditional ceramic stove heated by wood (log fire oven)) on mycotoxin deoxynivalenol (DON) and nivalenol (NIV) levels in bread was investigated. The DON and NIV concentrations in wheat grain, flour, and bread were analysed using high performance liquid chromatography with UV-detection methods. The 2,500 kg lot of wheat grain containing 1,400-1,900 $\mu\text{g kg}^{-1}$ deoxynivalenol and 130-200 $\mu\text{g kg}^{-1}$ nivalenol was divided into sub-lots which were processed to get three types of flour (F1: industrial bread flour, F2: industrial wholegrain flour, and F3: traditional wholegrain flour). The concentrations of DON and NIV measured after milling the grain according to MT1 (yielding F1) amounted to 310-370 $\mu\text{g kg}^{-1}$ and 50-70 $\mu\text{g kg}^{-1}$, respectively. After applying MT2 to the grain (yielding F2), the DON and NIV levels were measured to be 1,060-1,400 $\mu\text{g/kg}$ and 60-87 $\mu\text{g kg}^{-1}$, respectively. Applying MT3 (yielding F3) produced a DON level of 1,100-1,770 $\mu\text{g kg}^{-1}$ and a NIV level of 80-95 $\mu\text{g kg}^{-1}$. Six types of bread were baked from the three types of flour according to BM1 or BM2, and the mycotoxin levels were analysed. The average reduction in DON concentration after baking (70 min at 195–235°C) was 47.2% for bread baked in the industrial oven and 48.7% for bread baked in the log fire oven. Concentrations of DON in bread prepared by the industrial MT1 were under the permitted limit of 500 $\mu\text{g kg}^{-1}$ stated in EC (2006) regulation, despite the fact that the bread was baked from grains highly contaminated with mycotoxins. In the bread baked from traditional wholegrain flour, mycotoxin concentrations were higher (850-950 $\mu\text{g kg}^{-1}$).

Keywords: mycotoxin, deoxynivalenol, nivalenol, milling, baking, wheat, bread

Hayaloglu, A.A and Guven, M: Effect of single strains of lactococci on manufacture and chemical quality of fresh Beyaz peynir, Turkish White-brined cheese. Pp. 485-495. ahayaloglu@inonu.edu.tr

Beyaz peynir, Turkish white-brined cheese, was produced with six different strains of Lactococcus and ripened at 6-8 °C. Two of these were Lc. lactis subsp. lactis UC317 and NCDO763, while four of them were Lc. lactis subsp. cremoris SK11, HP, Wg2 and AM2. To determine their performance in manufacture of Beyaz cheesemaking, the activity of six different strains of Lactococcus were monitored during cheese production by determining the curd acidity. Also, their proteolytic and lipolytic activities were tested by determining nitrogen fractions and free fatty acid contents, respectively, after 3 days of ripening. These cheeses made with each strain of Lactococcus did not differ significantly in pH decline during cheesemaking. The gross compositions of the fresh cheeses were found to be similar; however, the cheeses made with HP and Wg2 had the lowest and highest levels of salt-in-moisture content, respectively. Water-soluble nitrogen, 12% trichloroacetic acid soluble nitrogen, total free amino acid and total free fatty acid contents were significantly influenced by using different strains of lactococci in manufacture of Beyaz peynir. All strains, except for Wg2 and AM2, gave a satisfactory result in chemical quality of the cheese; however, some differences were observed.

Keywords: Beyaz peynir, Turkish white-brined cheese, starter, Lactococcus, proteolysis

Zs. Fajcsák, Zs, Kovács, V, Gábor, A, Szamosi, T and Martos, É: Twelve week Low-Glycemic Load Diet Reduced Body Weight, Fat Mass and Hunger in Overweight/ Obese Children. Pp. 497-504. fajcsakz@yahoo.com

This is a preliminary report on the benefit of a weekly low-glycemic load (GL) diet intervention designed to positively effect body weight (BW) and body composition by reducing satiety in overweight/obese (BMI=28.38±5.86 kg/m²) pre-pubertal children over a 12-week period. Thirteen otherwise healthy (11.46±1.94 years) children participated in the study. The low-GL diet intervention included attending a weekly nutrition consultation, exchanging of at least 50% of the high glycemic index (GI) foods with low-GI foods in the diet and portion control. Dietary changes were made based on weekly 4-day food-diaries over the 12-weeks. There were significant reductions in BW (68.08±22.03 vs. 65.64±22.12 kg), body mass index (BMI; 28.38±5.86 vs. 27.09±6.2 kg/m²), fat mass (26.02±12.8 vs. 23.64±12.8 kg) % body fat (36.82±6.1 vs. 33.81±7.4), and circumference measurements; waist (95.73±14.01 vs. 90.76±14.26 cm); hip circumference (97.23±13.37 vs. 93.34±18.80 cm); thigh circumference (59.08±7.9 vs. 56.80±8.1 cm). The significant reduction of self-reported hunger level (3.46±0.92 vs. 1.51±1.11) was also observed. The 12-week Low-GL diet seems to be a practical, effective approach to treat obesity in children.

Keywords: obesity, children, low glycemic index, low glycemic load diet