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C.M. Capetillo Leal, L. Ancona Méndez, C.A. Sandoval Castro, and G. Cetz Zapata: Chemical composition and amino acid profile of pleurotus djamor and pleurotus ostreatus cultivated in mexico. Pp. 249-255. ccastro@tunku.uady.mx

Pleurotus djamor from Yucatan State, Mexico was compared with a local variety of P. ostreatus, in terms of chemical composition and amino acid profile. No differences were found (P=0.55) in crude protein content of P. djamor and P. ostreatus (20.2±0.15 vs. 20.3±0.16 g/100 g DM respectively). P. ostreatus had a lower fiber and fat content (P<0.05). No difference was found in ash content (P>0.05). P. ostreatus has a higher proportion (P<0.05) of valine, isoleucine, phenylalanine, aspartate and alanine while P. djamor had higher proportion (P<0.05) of proline and glutamate, no difference was found in the remaining amino acids. Both species had a high proportion of aspartate and glutamate. In general, the human amino acid requirements for adults are satisfied, however leucine and lysine might become limiting. It was concluded that P. djamor can be included in human diet in similar fashion as P. ostreatus.

Keywords: P. djamor, P. ostreatus, amino acids, chemical composition, oyster mushroom.

M. Fikselová, M. Kačániová and M. Mellen: Antioxidant (antiradical) and antimicrobial (antifungal) effects of slovak tokaj wines. Pp. 256-264. martina.fikselova@gmail.com

Fourteen quality wines from Tokaj area of Slovakia were analysed for their antioxidant and antimicrobial activity. All Tokaj wines showed very good antiradical effect (against DPPH radical), more than 50%, the best antiradical activity showed Tokaj essence (75.72%) and Tokaj 6 puttony (72.7-78%). Antioxidative (antiradical) effect of wines expressed in % inhibition ranged from 57.61 to 78.00. The year of grape cultivation and botrytization of grape showed important influence on antioxidant status of wines. The antimicrobial (antifungal) activity of Tokaj wines against fungi Alternaria infectoria, Scopulariopsis brevicaulis, Trichophyton ajelloi and yeast Saccharomyces cerevisiae was studied using the agar well diffusion method as well. The inhibition zones at Alternaria infectoria strains varied from 15.50±1.87 mm at Tokaj grade wine variety Furmint to 20.33±2.07 mm at Tokaj wine 6 puttony and 20.33±3.78 mm in the Tokaj Lipovina dry. The inhibition zones at Scopulariopsis brevicaulis strains varied from 17.33±3.01 mm, in the Tokaj wine Furmint dry to 24.67±7.89 mm in the Tokaj wine 4 puttony. At Trichophyton ajelloi strains inhibition varied from 21.33±4.50 mm in the Tokaj wine Furmint dry to 32.67±4.72 mm in the Tokaj wine spontaneous dry. The inhibition zones at Saccharomyces cerevisiae strains varied from 4.40±1.34 mm in the Tokaj grade wine variety Furmint to 8.17±1.72 mm in the Tokaj wine Furmint dry.

Keywords: Tokaj wines, antioxidant activity, DPPH, antimicrobial effect,

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L.C. Pereira, C.H.B. De Souza, J.H. Behrens and S.M.I. Saad: Lactobacillus acidophilus and bifidobacterium sp. In co-culture improve sensory acceptance of potentially probiotic petit-suisse cheese. Pp. 265-276. susaad@usp.br

Sensory acceptance of four trials of probiotic petit-suisse cheese was investigated. Cheeses were prepared using Streptococcus thermophilus TA 040 as starter and supplemented with non probiotic cultures (T1-control), Lactobacillus acidophilus La-5 (T2), Bifidobacterium animalis subsp. lactis BL04 (T3) and L. acidophilus + B. animalis subsp. lactis (T4). Sensory acceptance tests were performed after 7 and 14 days of storage at 4±1 ºC, using a 9-point hedonic scale to evaluate flavour, texture and overall acceptability. The population of La-5 and BL04 remained at 7.0 log CFU g-1 and at 8.0 log CFU g-1, respectively, during storage for up to 28 days. After 7 and 14 days of storage, cheese T4 presented the highest sensory acceptance for all attributes evaluated and differed significantly from the other cheeses ($P<0.05$). After 14 days of storage, cheese T3 presented the lowest acceptance and differed significantly from the other cheeses ($P<0.05$). The supplementation of petit-suisse cheese T4 with both La-5 and BL04 in co-culture with a starter culture resulted in a product with high probiotic populations during storage and excellent sensory acceptance. The results also showed that, when added separately, La-5 and BL04 supplementation did not affect the sensory acceptability of petit-suisse cheese.

Keywords: probiotic, Lactobacillus acidophilus, Bifidobacterium, Streptococcus thermophilus, petit-suisse cheese, sensory evaluation.

S.K. Shukla, S. Saxena, J. Thakur, and R. Gupta: Immobilization of polygalacturonase from aspergillus niger onto glutaraldehyde activated nylon-6 and its application in apple juice clarification. Pp. 277-292. reenagupta.hpu@gmail.com

The application of immobilized enzyme for catalyzing various biotransformation processes is a widely used approach at present. This work mainly focused on the immobilization of polygalacturonase from Aspergillus niger Van Tieghem (MTCC 3323) on Nylon-6 by covalent binding, keeping in view its applicability in apple juice clarification. The immobilized enzyme was characterized in terms of kinetic parameters, thermal stability and reusability. The enzyme was immobilized onto glutaraldehyde-activated Nylon-6 by covalent binding . The%and the efficiency of immobilization was found to be 40 immobilization yielded a protein loading of 70 µg-g-1 of Nylon-6. Immobilized enzyme showed maximum activity at a temperature of 50 °C and pH 5.0. The enzyme was stable between pH 4.0-5.5. The immobilized enzyme could be re-used through 4 cycles with almost 50% retention of its original activity. It had increased thermostability over its soluble form at 25 °C and 45 °C. Kinetic parameters Km and Vmax were found to be 7.6 mg-ml-1 and 41.66 µmol of galacturonic acid/ml/min respectively. The immobilized enzyme when used for apple juice clarification showed increase in transmittance of apple juice at 650 nm. This%about 50 increase was observed at enzyme concentration of 20 Uml-1 apple juice, temperature 50 °C and incubation time of one hour. The optimization of these factors, which affect the stability and productivity of the immobilized system, resulted in an increase in enzyme stability and the possibility of economic application of immobilized enzyme at large scale apple juice clarification

Keywords: Aspergillus niger, polygalacturonase, immobilization, Nylon-6.

S. Dubná, V. Rada, E. Vlková, V. Hořejšová, J. Havlík: Growth of bifidobacteria in a fermented wheat germ medium. Pp. 293-298. rada@af.czu.cz

An animal protein-free culture medium was developed for the cultivation of bifidobacteria. The medium is based on fermented wheat germ (wheat germ medium; WGM), which serves as a good source of amino acids for bacteria. The number of colonies, changes in pH and optical density were compared with commercial Wilkins-Chalgren (WCB) broth and a nonmilk-based general edible medium (GEM). All bifidobacterial strains (n=9) displayed good growth on WGM. Strains of Bifidobacterium animalis, B. longum and B. breve grew on all three media tested. On the contrary, B. bifidum did not grow on GEM. WGM seems to be suitable medium for the propagation of bifidobacteria and for the production of animal protein-free probiotic food.

Keywords: Bifidobacterium sp., cultivation media, wheat germ; probiotics

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S. Bounatirou, S. Smiti, M.G.Miguel, L. Faleiro, M.N. Rejeb, M. Neffati, M.M. Costa, A.C. Figueiredo, J.G. Barroso and L.G. Pedro: Thermal stability of the essential oils isolated from tunisian thymus capitatus hoff. Et link.: Effect on the chemical composition and on the antioxidant and antibacterial activities. Pp. 299-307.

The chemical composition, the antioxidant and the antibacterial activities of essential oils, isolated from the aerial parts of Tunisian Thymus capitatus during the flowering phase, and stored in the dark during 37 days in the oven, at 60°C were evaluated. Samples taken periodically were used to evaluate the chemical composition, the antioxidant and the antibacterial activities. With some fluctuations, carvacrol (68-74%) was the major component of the oil independent of the storage period. B Terpinene and B-terpinene decreased over time, whereas p cymene increased in the same period. Despite the thirty-seven days of storage at 60 C, T. capitatus essential oil still showed high antioxidant and stable antimicrobial activity.

Keywords: Thymus capitatus, essential oils, thermal stability, biological activities

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V.A. Kovács, ZS. Fajcsák, A. Gábor and É. MARTOS: Breakfast skipping is related to higher body mass index and higher waist circumference in primary school children. Pp. 308-316. kovacs.viktoria@oeti.antsz.hu

This paper examines the effect of breakfast skipping on weight status and abdominal obesity in urban school children. A cross-sectional survey was distributed to all primary schools (n=18) in Óbuda, Budapest. A total of 3714 students (1860 boys, 1854 girls; age range: 7-15 years) were involved. Height, weight and waist circumference (WC) were measured. Data about obesity-related dietary habits (breakfast skipping, fruit and vegetable intake, number of meals, soft drinks consumption) were collected via self-administered questionnaire. One fifth (21.3%) of the participants were regularly skipping breakfast. Frequency of regular breakfast decreased with age. Breakfast skipping was predictive for higher body mass index (BMI) and WC in a model that was adjusted for age, gender and all studied nutritional factors. Confirming these results, both BMI (19.3±4.0 vs. 18.1±3.7 kgm-2; $P<0.001$) and WC (67.3±12.0 vs. 63.9±10.8 cm; $P<0.001$) were higher among breakfast skippers than in breakfast eaters. Odds ratios for breakfast skipping for being obese or abdominal obese were 1.59 (95%CI: 1.12-2.26) and 2.04 (95%CI: 1.57-2.65), respectively. Although prospective studies are needed to verify the causality between breakfast skipping and obesity, our findings support the importance of promoting regular breakfast consumption among school children.

Keywords: BMI, breakfast, children, dietary behaviours, obesity, waist circumference

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J. Bošnir, D. Puntarić, V. Novosel, I. Klaric and M. Miskulin: Organochlorine pesticide residues in cows milk karlovac county, croatia. Pp. 317-326. maja.miskulin@inet.hr

The aim of this study was to determine the residue levels of the organochlorine pesticides in cows milk from Karlovac County, Croatia. The study included 48 pooled milk samples (40 pooled samples of non-processed (raw) milk and 8 pooled samples of processed milk collected in the Karlovac County from May 2003 until April 2004. Organochlorine pesticides DDT and derivates, HCH, lindane, heptachlor and endosulfan were determined using the GC-ECD method. The detection limit was 0.01µg kg-1. The determined amounts of organochlorine pesticides were predominantly and significantly below the Maximum Residue Limit (MRL) set by the European Union and which Croatia has also recently adopted as its standard. The study has confirmed pesticide persistence in milk samples from our country despite the fact that some of them have been banned some thirty years ago, which indicates a high degree of dispersion of this substances in the environment. Taking into account that milk is a foodstuff of high biological value consumed frequently and in large quantities by vulnerable groups of population (children, pregnant women, elderly people), the continued monitoring and control of organochlorine pesticides in milk is therefore of great importance for public health.

Keywords: milk, organochlorine pesticides, DDT, HCH, lindane, heptachlor, endosulfan, food safety, public health, Croatia

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R. Ágoston, Cs. Mohácsi-Farkas and S. D. Pillai: Exposure to sub-lethal temperatures induces enhanced heat resistance in listeria monocytogenes: Pp. 327-326. reka.agoston@uni-corvinus.hu

The food industry utilizes a variety of stressors such as heat treatment to inactivate or prevent the multiplication of L. monocytogenes in foods. The aim of this study was to identify the extent to which pre-exposure to sub-lethal temperatures would induce temperature tolerance to 60 °C and result in increased D values. The D value of an avirulent L. monocytogenes strain (4ab No 10) was initially determined in Tryptic Soy Broth at 55 °C, 60 °C and 65 °C. The cells were pre-exposed to sub-lethal heat stress of 46 °C (for 30 and 60 min), 48 °C (for 30 and 60 min) and 50 °C (for 30 and 60 min). Then they were exposed to 60 °C and the D60 values were calculated. The pre-treatment at sub-lethal temperatures enhanced the D60 value of the strain from 3.03 min to longer times. The D60 values increased as a function of pre treatment time at 46 °C: after 30 min exposure it was 5.24 min, and 16.18 min after exposure to 60 min. Similarly, the D60 value after 30 min and 60 min exposure at 48 °C was 6.72 min and 14.83 min, respectively. The D60 value after 30 min and 60 min exposure at 50 °C, was 13.88 min and 11.16 min, respectively. Heat injury was found to occur in this L. monocytogenes strain under the experimental conditions.

Keywords: L. monocytogenes, heat stress

J. A. Pino, E. Márquez and D. Castro: Changes in volatile compounds during the fermentation/aging of noni fruit (morinda citrifolia l.) By the ancient traditional process. Pp. 337-342. jpino@iiia.edu.co

Changes of volatile compounds of noni juice during the traditional process of fermentation/aging was studied by means of HS-SPME and GC-MS. Major acids, octanoic and hexanoic, diminished their concentration; while esters of ethanol, 1-butanol and 1-hexanol, with their flavour fruity notes, increased. The concentration of esters of methanol and 3-methyl-3-buten-1-ol decreased during the fermentation/aging process, whereas major alcohols of noni juice, 1-hexanol and 1-octanol, increased their concentration during the process. During the 60 days of the process the volatile composition of the noni juice had reached stability. These chemical changes justify that fermented juice possesses a flavour less pungent than fresh juice due to an important decrease in the hexanoic and octanoic contents, as well as a greater fruity note due to the increment in ester concentrations.

Keywords: Morinda citrifolia; noni juice; fermentation; aging; volatiles

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J. Gericke, G. Aydemir, G. Ulbricht and R. Rühl: Statistical calculation of the transition of vitamin a and β-carotene ingestion in the former west and east german regions between 1986 and 1993. Pp. 343-356. rruehl@dote.hu

Retinol (ROL) and β-carotene (BC) are vitamin A (VA) derivatives and are taken up by humans for use as nutrients. The intake of these derivatives can be calculated by extrapolation from food consumption data. In this study, food consumption statistics of the former West and East German regions between 1986 and 1993 were calculated, concentrating on East Germany's transition towards reunification with West Germany. Retinol equivalent (RE), ROL and BC intakes in 1986 were much lower in East Germany than in West Germany. A strong increase in the uptake levels of RE, ROL and especially BC from 1986 to 1993 was observed in East German women, men and children, and was partly dependent on household financial status. This remarkable elevation was most likely caused by alterations in consumed food varieties in East Germany following reunification.. Since high dietary intake of VA was shown to be associated with atopy, the observed elevated RE, ROL and especially BC uptake of East Germans might also have affected their prevalence of atopic disease.

Keywords: carotene, retinol, ingestion/consumption, East/West Germany, atopy

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R. Klewicki and M. Uczciwek: Effect of osmotic dehydration in the carbohydrate mixtures containing fructooligosaccharides on the oligosaccharide content of apples. Pp. 357-367. robertkl@p.lodz.pl

Apples (Idared) were subjected to osmotic dehydration in: a) 50% solutions of fructooligosaccharides (FOS) at 40° 70 °C (apple/solution 1/2), b) 50% solution of FOS at 40 °C using different amount of solution (apple-solution ratio from 1/2 to 1/5), c) 50° 65% solution of FOS at 40 °C (apple/solution 1/4). The content of fructooligosaccharides in dried material was determined. An increase in temperature and amount of the hypertonic solution intensified the migration of fructooligosaccharides to the fruit tissue. There was no direct relationship between the concentration of the hypertonic solution and the FOS content of dehydrated apples. The contents of fructooligosaccharides and dry substance in fruits dehydrated under different conditions were interlinked. Dehydrated apples of a content of fructooligosaccharides of 7-9% w/w were obtained when the content of dry substance was approximately 30%.

Keywords: apple; fructooligosaccharides; saccharose; fructose; glucose; osmotic dehydration

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Němečková, H. Rohacká, K. Kucerová, S. Tuma, P. Roubal, M. Pechacová, J. Cicvárek and M. Plocková: Inhibition of clostridium tyrobutyricum in cheese-slurry. Pp. 368-377.
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Effects of muramidase, potassium nitrate, the mesophilic starter culture, nisin, the nisin-producing Lactococcus strain and two Lactobacillus strains with anticlostridial activity on survival and growth of the gas-producing Clostridium tyrobutyricum in a model cheese-slurry system were compared. Control cheese-slurry sample and samples with anticlostridial substances or cultures were inoculated with C. tyrobutyricum and stored at 8±1 °C in a cheese ripening cellar for 2 months. During this period spores of gas-producing clostridia were determined by the MPN method, and the presence of inoculated strains after storage was confirmed by PCR. Within the first 2 weeks potassium nitrate, muramidase and nisin had the strongest anticlostridial activity but then their effect decreased. On the other hand, effect of added cultures was observed during both months of storage. The most effective were the nisin-producing Lactococcus strain and the aroma-producing mesophilic culture – they caused a decrease in clostridial spores of about 1.5 to 2 decimal orders in comparison with the control sample at the same storage period.

Keywords: Clostridium tyrobutyricum, gas-producing clostridia, cheese, cheese-slurry, muramidase, bacteriocin, nisin, nitrate