

**Halász. A, Salgó. A, Cserhalmi. Zs, Farkas. J, Beczner. J, Holzapfel. W,H and Raspor, P:** Academican János Holló is 90 years old. p. V.

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**Sárdi. É, Stefanovits-Bányai. É, Kocsis. I, Takács-Hájos. M, Fébel. H and Blázovics, A:** Effect of bioactive compounds of table beet species on alimentary induced fatty livers of rats. Pp. 267-280. blaz@drog.sote.hu

Of the twenty table beet (*Beta vulgaris* L. ssp. *esculenta* convar. *crassa* provar. *conditiva* ALEF.) cultivars investigated for several nutritionally important components (betaine, betanin, phenol, glucose, fructose, sucrose) formerly (HÁJOS et al., 2004), cultivar Ditroithaving average quality parameters was chosen for in vitro animal experiments. The hyperlipidemic rat model is suitable to study the physiological effect of table beet on the metabolic alterations and the redox homeostasis in the liver. In fatty liver, as a consequence of hyperlipidemy, the redox homeostasis is strongly injured. General biologically active compounds of table beet have indirect lipid lowering effect and antioxidant properties. Therefore, the effect of lyophilised table beet powder was studied on altered lipid metabolism and redox parameters in hyperlipidemic rats. Hyperlipidemy was induced by a fat-rich diet, and both in the control group and in the hyperlipidemic group, animals were treated with the lyophilised table beet powder (2 g bwkg<sup>-1</sup>) added into rat chow for 10 days parallel with the feeding. Significant antioxidant activity of table beet was recorded in the hyperlipidemic liver. This phenomenon was expected because of the significant amount of betanin and the high total polyphenol content of the beet. Significant beneficial changes were also observed in the serum cholesterol level, alkaline phosphatase and alanine-aminotransferase activities, although a non-expected elevation was observed in the serum bilirubin level in hyperlipidemy. Non-specific H-donor activity was not changed, but protein related free SH-group concentration was decreased in the plasma. Serum triglyceride level was better after table beet treatment in normolipidemy, only. . Change of redox-homeostasis was more favourable in the liver during the treatment. Diene conjugate content and the level of induced free radicals decreased during the table beet treatment in case of fatty liver. These changes were due to the bioactive components of the commercially available table beet. Consequently, table beet due to its specific qualities beneficially influences several metabolic pathways, therefore it can be considered as a functional of food.

**Keywords:** betaine, betanin, total polyphenols, lipid-lowering bioactive constituents, redox homeostasis

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**Szajdek. A, Borowska. E,J and S. Czaplicki:** Effect of bilberry mash treatment on the content of some biologically active compounds and the antioxidant activity of juices. Pp. 281-292. agnieszka.szajdek@uwm.edu.pl.

The aim of the present study was to determine the effect of different bilberry mash treatment methods, i.e. heat treatment, enzymatic treatment and combined treatment (enzymatic maceration preceded by heat treatment) on total phenolics, anthocyanin profile and ascorbic acid as well as on DPPH<sup>·</sup> and OH<sup>·</sup> radical scavenging activity of juices. Three fractions of juice containing different groups of phenolic compounds were evaluated. Enzymatic maceration of fruit mash was carried out using three enzymatic preparations: Pektopol PT-

400, Pectinex BE Colour and Gammapect LC Color. Juices obtained by combined treatment of fruit mash (enzymatic maceration preceded by heat treatment) were the richest source of total phenolics, the concentration of which ranged from 2304 to 4418 mg l<sup>-1</sup> in these juices. These juices showed also the strongest DPPH<sup>·</sup> and OH<sup>·</sup> radical scavenging activity. Juices produced from fruit mash subjected to enzymatic maceration contained the highest amount of anthocyanins. The juices differed considerably with regard to their anthocyanin profile, determined by HPLC. Ascorbic acid content was at a comparable level in all juices, and varied between 13.5 and 16.9 mg/100 g. Fraction I, containing mostly anthocyanins, showed the highest DPPH<sup>·</sup> and OH<sup>·</sup> radical scavenging activity, while fraction III, dominated by phenolic acids, was found to be the least active.

**Keywords:** bilberry juices, mash treatment, total phenolics, anthocyanins, ascorbic acid, radical scavenging activity, DPPH<sup>·</sup>, OH<sup>·</sup>

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**Markiewicz. L,H, Biedrzycka. E, Wasilewska, E and Bielecka. M:** Differentiation of strains identified as *Bifidobacterium animalis* subsp. *lactis*. Pp. 293-301. : lidiam@pan.olsztyn.pl

Six strains (Bi11, Bi30, Bi36, Bi50, Bi52 and Bi55) isolated from bio-yoghurts and two strains (KD10 and KD11) derived from human faeces were identified by genus- and species specific polymerase chain reaction (PCR) with reference to the type of strains of *B. animalis* subsp. *lactis* DSM 10140 and *B. animalis* subsp. *animalis* DSM 20104. The isolates were differentiated by using BcuI (SpeI), XbaI, and DraI endonucleases for subsequent pulsed field gel electrophoresis (PFGE) technique and by API 50 CHL tests. All the isolates tested were classified to *B. animalis* subsp. *lactis* species. The reliable identification as *B. animalis* subsp. *lactis* (by PCR with Bflact2/Bflact5), however, required confirmation by a negative result of *B. animalis* subsp. *animalis*-specific PCR. Differentiation of the *B. animalis* subsp. *lactis* isolates with PFGE method enabled to distinguish KD11 strain with all the restriction enzymes applied, and Bi11 and Bi30 – exclusively with DraI and SpeI enzymes, respectively. The biochemical tests, however, revealed that all the strains tested were characterised by a unique fermentation pattern. It was concluded that differentiation of the *B. animalis* subsp. *lactis* strains should be carried out on the basis of both genetic and phenotypic features.

**Keywords:** *Bifidobacterium animalis* subsp. *lactis*, identification, PCR, differentiation, PFGE, carbohydrate fermentation

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**Portari. G,V, Mathias. M,G,M, Almeida. B,B, Marchini. J,S and JORDAO. A,A:** Effect of the temperature and pH on methanol release in coffee brew sweetened with aspartame. Pp. 303-307. gportari@fmrp.usp.br

Methanol is an alcohol which is metabolized to formaldehyde in humans. It's a very toxic substance, responsible for blindness in cases of methanol intoxication. This study shows the production of methanol when aspartame is used to sweeten coffee brew. The temperature versus pH binomium was also tested. When assayed at 90 °C coffee brew+aspartame and aspartame solution showed an increase in methanol release of 17.8 and 19.3%, respectively, as compared with coffee brew. At 180 °C, the increase was 32.5 and 26.3%, respectively. Our data revealed a protective effect of the pH of coffee on the degradation of aspartame and formation of methanol; an important fact, mainly for specific populations that use aspartame,

like diabetics.

**Keywords:** aspartame, coffee brew, methanol Sirbu.

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**D, Popa. M and Curseu, D:** Approaches to vegetarian diet and its nutritional risk in youngs. Pp. 309-317. dana\_m\_sirbu@yahoo.com

Nowadays, vegetarian nutrition is getting more widespread. The risk of choosing vegetarian diet in young people remains a controversial subject. The aim of this paper is to assess the dietary intake and nutritional status of a vegetarian group aged 16–20 years and to compare the results with those of a non-vegetarian group. On the basis of 10 days of dietary records, the intake of vegetarian group tended to be lower in proteins ( $P<0.05$ ), fat ( $P<0.05$ ), cholesterol ( $P<0.001$ ) and higher in carbohydrates ( $P<0.05$ ) and dietary fiber ( $P<0.001$ ). Vegetarians have a lower intake of calcium ( $P<0.001$ ), and vitamin B12 ( $P<0.001$ ) and higher intake of phosphorus, magnesium ( $P<0.001$ ), iron, vitamin E (especially in males), folate and vitamin C (especially in females) than omnivores. In addition, none of the vegetarian subject was overweight and their anthropometric indicators were lower than those found in the non-vegetarian group. Triacylglycerol ( $P<0.05$ ), total cholesterol ( $P<0.05$ ), ionised calcium ( $P<0.05$ ), seric iron ( $P<0.001$ ) and vitamin B12 ( $P<0.001$ ) are lower in vegetarians than in omnivores, but all are still in the normal range.

**Keywords:** lacto-vegetarian, vegans, vegetarian diet, nutritional risk, young

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**Romanić. R, Dimić. E, Lazić. V and Vujasinović. V:** Oxidative stability and tocopherol content of refined sunflower oil during long-term storage in different commercial packagings. Pp. 319-327. rankor@uns.ns.ac.yu

The study was undertaken to monitor the changes in oxidative stability and -tocopherol content of refined sunflower oil during 12 months of storage at room temperature in different commercial packagings: Tetra brick, polyethylene terephthalate (PET) bottles and polyethylene (PE) canisters. The results showed significant influence of packaging type on the oxidative stability of oil. The largest changes were determined in oil packed in PE canisters (volume 5 L), where the peroxide values (PV) after 12 months were 9.34 and 10.46 mmol kg<sup>-1</sup>, while the lowest increase in PV were 1.05 and 1.67 mmol kg<sup>-1</sup> in Tetra brick packaging. The highest increase in specific absorbances was also noticed for oil packed in PE canister. It came to loss of tocopherol during storage in accordance with the degree of oil oxidation. In oil packed in Tetra brick 6.52 and 8.14% losses of tocopherol (compared to the initial value) were found, while the losses in canister were found to be 14.18 and 17.88%. The results of Schaal-oven test also indicated decrease of oxidative stability during storage in accordance with protective properties of packagings and packing conditions.

**Keywords:** refined sunflower oil, packaging, long-term storage, peroxide value, tocopherols

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**Szymkiewicz. R and Jędrychowski. L:** Immunoreactivity of acetylated and succinylated pea proteins. Pp. 329-339. agaszym@pan.olsztyn.pl

Proteins of pea variety Kwestor, grown in Poland, were modified with acetic or succinic anhydride (0.01 – 1.0 g g<sup>-1</sup> anhydride/protein). Degree of acylation, electrophoretic properties (SDS-PAGE) and immunoreactivity (by ELISA) were studied. The study indicates that not only the degree of acylation but also the type of anhydrides affected the extent of changes in the immunoreactivity of individual pea proteins. The greatest reductions in the immunoreactivity of albumins and legumin were observed during acylation with 0.2 g anhydrides (by 91-99 % and 79-97% during succinylation and acetylation, respectively). The lowest immunoreactivity of vicilin fraction was found when 1.0 g of anhydride was used (about 6% during succinylation and 14.7% during acetylation as compared to the immunoreactivity of vicilin in native pea proteins).

**Keywords:** pea proteins; acylation of proteins; immunoreactivity of proteins

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**Tömösközi. S, Baracskaï. I, Schönlechner. R, Berghofer. E and Lásztity. R:** Comparative study of composition and technological quality of amaranth. I. Gross chemical composition, amino acid and mineral content. Pp. 341-347. tomoskozi@mail.bme.hu

Eight groups of amaranth grain samples, belonging to the species *Amaranthus cruentus* and *A. hypochondriacus*, grown in Austria and Hungary were studied. Gross chemical composition, amino acid content and mineral composition of the whole grain were determined. The effect of heat treatment on amino acid content was also investigated. The range of concentration of main constituents of samples studied corresponded to the average data reported by other researchers. However, the relatively big difference between lowest (14.23%) and highest (17.40%) protein content suggests that genetic potential for increasing the protein content may be realized in breeding. Amino acid composition profile is generally closer to Leguminosae than to cereal grains except for sulphur containing amino acids being present in higher amount in amaranth than in legumes. The concentrations of minerals in seeds varied in a relatively wide range, and the micro-components, like Fe, Cu, Zn, were present in higher amount in amaranth seeds compared to the average values found in wheat. It was confirmed that heat treatment of amaranth grain (e.g. popping) might reduce the available lysine content. Contradictory data published in the literature may be explained by differences in initial sugar and moisture content of grain, which influence the rate of potential Maillard-reaction.

**Keywords:** amaranth grain, chemical composition, amino acid profile of proteins, effect of heat treatment

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**Dragoev. S, G and Balev. D,K:** Diffusion of lipolysis and lipid oxidation in fried and oven-baked mackerel. Pp. 349-360. : stefan\_dragoev@yahoo.co.uk; logos2000lt@gmail.com

The processes of lipolysis and lipid oxidation during frying, oven-baking and subsequent storage under refrigeration of mackerel previously stored at -18 °C for six months were studied. The lipids and fatty acid content of the fish were characterized. The acid number, peroxide number, thiobarbituric acid reactive substances, and the conjugated dienes and trienes were traced dynamically. It was observed that the defrosted mackerel was characterized by advanced stage lipolysis and accumulated lipid oxidation primary products. During the frying and oven-baking of the defrosted mackerel, the lipolysis spread throughout the fish. The hydroperoxide content decreased 4.7–4.9 times and mostly secondary derivatives of lipid

oxidation accumulated. During the process of frying the mackerel, the lipid oxidation chain was widespread. More conjugated triens and fewer conjugated diens were formed, and the polyene indices increased. In contrast, oven-baking did not cause changes to the conjugated lipids, and the polyene indices decreased more than 60%.

**Keywords:** fish, frying, baking, lipolysis, lipid oxidation, AV, POV, TBARS, conjugated diens and triens

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**Rurik. I and Sandholzer. H:** Obesity among Hungarian elderly. Pp. 361-367. rurik.dr@t-online.hu; imre@rurik.eu

The epidemiological importance and serious health consequences of obesity is one of the most important medical issues. This cross sectional study, including retrospective elements, aims to measure the occurrence and to seek for the possible reasons of obesity among elderly people in Hungary. The 266 elderly subjects (109 man over and 157 women over 60y) were consecutive selected in primary care setting. Questionnaire on eating habits and life style, dietary record, medical check-up, anthropological measurements were performed. During the aging the meal frequency becomes more regular. People with lower body mass index ate frequently than overweight (BMI: 25-30 kg/m<sup>2</sup>) or obese persons (BMI>30 kg/m<sup>2</sup>). Obese people represented a smaller proportion in the older decades. According to the retrospective body-weight analysis the increase of body weight was significantly higher in the obese group than in the overweight category and by normal weighted people. Daily energy intake was high in both genders. In the obese group the ratio of people educated in primary school only, was much higher. The food choices were influenced by economic reasons in two third of the studied population. Thirty percent of obese people had obese parents and 24% of them had obese children. Unfavorable nutritional habits and sedentary life style may have a prior responsibility for obesity. Prevention and medical intervention should be started in time at primary health care level.

**Keywords:** elderly, Hungarian, nutritional habit, obesity, primary care

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**Sáray. T, Felföldi. J, Koncz. A, Horti. K, Zsom-Muha. V and Emekendoko. A:** Product and quality characteristics for predictive purposes: a case for cold storage of potato (*solanum tuberosum* L.). Pp. 369-380. tamas.saray@uni-corvinus.hu

Reliable product characteristics are needed for the prediction of shelf life by mathematical models in the post-harvest sector. Exact knowledge of the nature of changes during ripening and storage in refrigerated storage is essential. Authors investigated physical, chemical and biological changes of field-grown, autumn-harvested food grade potato (cultivar Kondor) as a function of temperature and storage time and the market quality was determined by visual assessment. Most of the investigations were preceded by sampling and methodological examinations. The most appropriate characteristics for the predictive modelling were: water soluble solids content, total starch content, weight loss during storage, marketability of the product (visually assessed) and texture parameters: acoustic firmness factor and bio-yield (by Instron Universal Testing Machine). Components of complex impedance, except for some cases, would be unreliable factors in model creation.

**Keyword:** potato, cold storage, keeping quality, temperature, product characteristics

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**Woo. Y,P, Fung. W,Y, Easa. A,M and Liong. M,T:** Probiotic-fermented soyfoods: benefits and enhanced bioactivities. Pp. 381-391. [mintze.liong@usm.my](mailto:mintze.liong@usm.my)

The consumption of soy has long been associated with various health-enhancing effects including hypocholesterolemia, antihypertension, alleviation of post-menopausal symptoms, and reducing risks of ovarian cancer and cardiovascular diseases. Past studies have indicated that these effects are mediated by bioactive components of soy such as isoflavones and bioactive peptides. However, some of these bioactive components could only confer health benefits upon bioconversion by gastrointestinal microorganisms in the intestines. This has led to increased interest to evaluate the possibility of utilizing probiotics to enhance the bioactivities of soyfoods. Probiotics are live microorganisms that could exert health benefits on the host when administered in adequate amounts. Probiotic-fermented soyfoods have been shown to have increased antihypertensive properties and could better alleviate menopausal associated disorders. However, this area is relatively new and although seemed promising, most of the recent findings have emphasized on in-vitro evaluations, while the lack of in-vivo evidence and/or incompatible outcomes between in-vitro experiments and in-vivo trials has led to the need to better understand the exact mechanisms involved. This present review highlights some of the benefits of soy and addresses the currently investigated bioactivities of probiotic-fermented soyfoods.

**Keywords:** soy, isoflavones, probiotic, antihypertension, post-menopausal symptoms, hypercholesterolemia, bioactive peptides

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**Jobbágy. A, Kiss. B, Bakos. V and Tardy. G:** Activated sludge nuisances in a vegetable processing wastewater pretreatment plant. Pp. 393-404. [ajobbagy@mail.bme.hu](mailto:ajobbagy@mail.bme.hu)

In order to decrease the organic load on the downstream domestic wastewater treatment plant, a three stage, fully aerated activated sludge system was established for the pretreatment of a vegetable processing wastewater. The results of the research verified that this design was inappropriate at the given, highly fluctuating wastewater quality. Nitrate formed through nitrification of the pea processing wastewater could not be denitrified, thus rising sludge occurred in the secondary clarifiers. On the other hand, during the corn campaign, severe deterioration of the COD (Chemical Oxygen Demand) removal efficiency, as well as the overproduction of extracellular polysaccharides leading to viscous bulking, were caused by the extremely high C/N ratio. In order to efficiently treat the wastewater of the vegetable processing industry, establishment of highly flexible systems with unaerated first stage proves to be necessary.

**Keywords:** Activated sludge; vegetable processing wastewater; viscous bulking; nutrient deficiency; rising sludge