

Editorial: Biró, Gy.: Foodborne infections and bacterial intoxications – a new-old challenge for food science and medicine.

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Lakner, Z., Hajdu, I.: After the transition –before the EU joining: competitive strategies of the Hungarian food industrial enterprises.

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After the transformation process and privatisation a rather specific dual structure has been formed in the Hungarian food industry: large food industrial enterprises, dominantly in foreign ownership, fulfilling locally the global strategy of the international firm, and micro, - and small - scale firms in domestic ownership. The strategic behaviour of Hungarian food industrial firms have been examined by direct-question surveys and interviews. Based on enterprise- and business- level strategy theories, the objective was to create a taxonomy of strategic patterns of Hungarian food industrial firms. On basis of investigations four characteristic groups of small and medium scale enterprises could be separated from each other. The high cost of technology development, the uneven quality and quantity of agricultural raw material, the concentration of food trade organisations are important hindrance factors of development of food industrial enterprises. The small and medium scale enterprises consider the activity of chambers of producers as an important tool in improving their economic position. In opinion of food industrial entrepreneurs the most important factor of success in privatisation was the knowledge of legal loops and good social network. Under these conditions, the promotion of preparation of newly formed small and medium scale enterprises to meet the demands of EU joining is a necessary precondition of success. The multinational food industrial enterprises forming four groups follow diversified strategies. This variability of multinational firms increases the flexibility and competitiveness of the Hungarian food industry

Keywords: competitiveness, strategic planning, primary data collection, comparative statistical analysis

Novák, I., Zámboi-Németh, É., Horváth, H., Seregély, Zs., Kaffka, K.: Study of essential oil components in different Origanum species by GC and sensory analysis.

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Oregano is used worldwide both as spice and crude drug, which is mainly provided by species of Origanum genus. Quality of the product is usually determined by chemical analysis, while in food industrial applications also sensory tests are practised. Aim of the present study was a comparison of parallel quality investigations of oregano samples, by a new and effective instrumental sensory evaluation method "electronic nose", and by gas-chromatographic and human sensory analysis.

The GC analysis of essential oil components revealed mainly differences between plant species (Origanum vulgare ssp. hirtum and Origanum majorana). Main components of the oil of the former taxon are carvacrol and thymol, while those of marjoram are terpinene-4-ol, γ -terpinene and terpinolene. A wholesale oregano sample showing considerable divergence

from the other ones in respect of ratios of carvacrol, β -caryophyllene β -cubebene and thymol. It was assumed not to belong to ssp. *hirtum*. The electronic nose analysis, evaluated by PCA proved to be an appropriate, rapid, non-destructive, reagent-less method for the reliable separation of all of the oregano samples based on their complex aroma features. Assumptions could be made about correlations between separation of samples by the instrumental sensors and proportions of terpenoid compounds of the oil established by GC only in some cases. The varying content of essential oil of the samples did not influence the success of instrumental evaluation. The instrumental and human sensory analysis showed similar results: varieties of *O. majorana* could be considerably distinguished on the base of their complex aroma, while their gas-chromatograms did not show characteristic differences. The results call the attention, that quality evaluation of drug items of aromatic plants should be oriented in different directions, considering the current utilisation area of the items.

Keywords: *Origanum vulgare* ssp. *hirtum*, *Origanum majorana*, gas-chromatography, sensory analysis, electronic nose

Bozanic, R., Tratnik, Lj., Hruskar, M.: Influence of culture activity on aroma components in yoghurts produced from goat's and cow's milk.

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In this paper the experiments on microbiological quality and aroma components of yoghurt samples produced from long life goat's and cow's milk, and also from milks with 2% milk powder addition, during 9 d of refrigerated storage were described. Milk fermentation was conducted at 42 °C for 6 h. During d 1, 3, and 9 of storage the changes in acidity (pH value and lactic acid percent), viable counts of streptococci and lactobacilli, and aroma components (acetaldehyde and diacetyl) were determined. Lower pH values and smaller lactic acid concentrations were found in control yoghurt samples. Viable counts of streptococci decreased during storage (from 1.01×10^8 to 3.97×10^7 CFU ml⁻¹), whereas the viable counts of lactobacilli increased in all samples (from 6.95×10^6 to 2.32×10^7 CFU ml⁻¹). The increase in count of lactobacilli was greatest in goat's milk yoghurt samples. On the ninth day of storage, DlogN between cow's and goat's milk yoghurt samples was 0.2. Acetaldehyde in yoghurts decreased during storage time from 5.47 mg kg⁻¹ (on d 1) to 1.05 mg kg⁻¹ (on d 9). Both control yoghurt samples had lower acetaldehyde concentration than did the supplemented samples. During nine days of storage, a significant increase in diacetyl content of yoghurt samples (from 14.20 mg kg⁻¹ on the first day to 18.65 mg kg⁻¹ on d 9) was noticed. goat's milk yoghurts, especially that manufactured without milk powder addition, had very soft consistency but no syneresis was observed.

Keywords: goat's milk yoghurt, microbiology, acetaldehyde, diacetyl, storage

Zdunczyk, Z., Juskiwicz, J., Wróblewska, M., Flis, M.: Effect of faba bean seeds with different content of proanthocyanidins on growth of rats, caecal enzyme activity and metabolism indices.

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Rats were fed for 6 weeks with diets containing seeds or their fractions (cotyledons and hulls) of two types of faba bean: colour-flowered varieties (dark seeds) and white-flowered strain (light seeds). Compared to dark seeds, the light seeds contained more crude protein (29.68%

vs. 26.96) and less fibre (CF: 7.79 vs. 8.54% and DF: 24.74 vs. 28.93%). The light seeds contained also more a-galactosides (3.88%) than the dark seeds (3.37%). Amino acid composition, e.g. the content of lysine, methionine and cystine in the seeds and cotyledons of different types of faba bean was similar. The content of total polyphenols in light seeds of white flowered faba bean (2.79 g kg⁻¹) was about five times lower than in dark seeds of colour-flowered varieties (10.95 g kg⁻¹). Proanthocyanidins (condensed tannins) consist about 65% of the content of total polyphenols in dark seeds and about 1% of polyphenols in light seeds. The content of proanthocyanidins in the diet (about 2.7 g kg⁻¹) significantly lowered the body weight gain of rats and protein efficiency ratio (PER). Proanthocyanidins decreased also the activity of b-glucuronidase in the caecal digesta, without affecting activity of a- and b-glucosidase and a- and b-galactosidase. Different proanthocyanidin content in diet had no effect on the content of glucose, triglycerides and total cholesterol in the serum and activity of selected enzymes: aspartate aminotransferase, alanine transferase, superoxide dismutase and glutathione peroxidase.

Keywords: *Vicia faba* L., proanthocyanidins, nutritional value, enzyme activity, caecal contents, rat

Dziuba, J., Minkiewicz, P., Darewicz, M. Mioduszevska, H., Dziuba, Z.: Action of the chymosin on reconstituted casein systems. Pp. 169-179. dziuba@uwm.edu.pl

The aim of this work was to study the chymosin-catalysed hydrolysis of reconstituted casein systems containing α 1-casein, α 2-casein, b-casein and k-casein or b-casein modified via chemical glucosylation and/or enzymatic dephosphorylation. The systems containing modified b-casein instead of k-casein were destabilised after release only trace amounts of peptides. The coagulation of the systems reconstituted using k-casein required release of much more peptides than coagulation of these containing modified b-casein. Proteolysis range in both classes of reconstituted systems was much smaller than proteolysis range in milk. The specificity of chymosin against reconstituted systems was typical. The major proteolysis products were para-k-casein and caseinomacropetide in the systems reconstituted using k-casein as well as fragment 1-23 of α 1-casein and fragment 193-209 of b-casein in all the systems used. Only the systems containing k-casein formed gel with the structure similar to this obtained via casein coagulation in milk.

Keywords: casein, dephosphorylation, glucosylation, proteolysis, reconstituted casein systems

Lugasi, A.: Polyphenol content and antioxidant properties of beer. Pp. 181-192. h4550tot@ella.hu

Total polyphenol content and in vitro antioxidant properties were investigated in five lager and three dark beers. The average concentration of total polyphenols in lager and dark beers was 376 and 473 mg l⁻¹, respectively. All samples exhibited strong hydrogen-donating property and reducing power in concentration-depending manner. Beers also showed copper(II)-chelating ability and antioxidant property in Randox TAS measurement. The differences of polyphenol content of antioxidant characteristics between lager and dark beers were statistically not different. Antioxidant properties were dependent on the total polyphenol content of beers. The concentration of polyphenols and antioxidant properties except for

chelating ability of beers measured in the same in vitro test system was very similar to those characteristics of white wine while the extent of chelating ability of beers showed similarity to that of red wines. Studies evaluating the relative benefits of wine versus beer versus spirits suggest that moderate consumption of any alcoholic beverage is associated with lower rates of cardiovascular disease. Although beers have antioxidant capacity like white wines but having half alcoholic content than wines beers should be good sources of antioxidant polyphenols and moderate consumption as a part of a well-balanced diet cannot be criticised either medically nor socially and may have a beneficial effect on reducing oxidative disorders.

Keywords: beer, wine, polyphenol content, antioxidant properties

Wróblewska, B., Karamac, M.: Analytical methods for estimating protein hydrolysates quality. A review.

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The article reviews information on analytical methods applied for estimating protein hydrolysates quality and focuses mainly on physico-chemical methods of establishing degree of hydrolysis and distribution of molecular masses weights of the obtained hydrolysates as well as on immuno-chemical methods determining antigenicity and immunogenicity. A separate group of studies is made by clinical tests for determining hydrolysates allergenicity. The article also outlines available information on the hydrolysates currently used as formulas for infants with dietary allergies.

Keywords: allergenicity, degree of hydrolysis, exclusion chromatography,

Vasdinnyei, R., Simonics, T., Mészáros, L., Deák, T.: Comparison of different media for isolation and enumeration of yeasts occurring in blue-veined cheese.

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Comparison of eleven selective media for detecting and enumerating foodborne yeasts in Blue-veined cheese showed that rose bengal chloramphenicol agar (RBC), dichloran rose bengal chloramphenicol agar (DRBC), oxytetracycline gentamycin glucose yeast extract agar (OGGY) and dichloran 18% glycerol agar (DG18) were the most efficient. Other examined media failed to be suitable for either inhibiting bacteria and suppressing the spread of moulds or supporting growth of all yeasts present all these requirements. Significant differences ($p > 0.05$) were obtained on different media but counts obtained were overlapping on three groups of media. Yeast extract eugenol agar (YEE) medium significantly differed from all others.

Keywords: yeasts, enumeration, media, blue-veined cheese

Book review