

Editorial: Durán, L.: Measurement of sensory attributes in food quality control.
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Behrens, J.H., M.Roig, S. and Da Silva, M.A.A.P.: Fermentation of soymilk by commercial lactic cultures: development of a product with market potential.
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Soymilk supplemented with 2% sucrose was inoculated with a mixture of *Streptococcus thermophilus*, *Bifidobacterium lactis* and *Lactobacillus acidophilus*. The fermentation was monitored by pH as a function of time. This sample was used as a basis for the formulation of beverages flavoured with pineapple, strawberry, coconut, kiwi, guava and hazelnut. The beverages were submitted to a sensory acceptance test with consumers using the nine-point structured hedonic scale. ANOVA and Preference Mapping were used to analyse data and results showed higher significant ($p < 0.05$) acceptance for pineapple and guava flavours. The strawberry, kiwi and coconut flavours obtained acceptance close to 6.0 (liked slightly), while the hazelnut flavour was rejected (acceptance less than 5.0). This study demonstrated that it is possible to formulate highly acceptable soymilk beverages by way of lactic fermentation and addition of flavourings.

Keywords: Soymilk, fermentation, sensory evaluation, preference mapping

Hlastan Ribič, C., Pokorn, D., Cerar, A., Mehikič, D. and Zebič, A.: The influence of fat diet, wine and ethanol on changes in skeletal muscles in Wistar rats.
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Consumption of fat diet causes deposition of fat into skeletal muscles and alcohol increases fat deposition. This study determined effects of fat diet, wine and ethanol on changes of skeletal muscles of rats. It was found that the group of rats fed with fat diet and wine had the lowest daily nutrients energy intake, the lowest average muscle weight but had the highest percentage of fat in skeletal muscles and the highest burning value. Average weights of skeletal muscles of rats consuming alcohol (wine or ethanol) were significantly lower than average weights of skeletal muscles of rats not consuming alcohol in case of fat diet. Results of chemical analysis show that chronic alcohol consumption increases fat deposition in skeletal muscles and increases their burning value in case of fat diet. No difference between effects of ethanol or wine on changes of skeletal muscles was observed.

Keywords: skeletal muscles, alcohols, wines, dietary fats, muscle damage

Šereš, Z., Gyura, J., Eszterle, M. and Vatai, Gy.: coloured matter removal from sugar-beet industry syrup by ultra- and nanofiltration.
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The produced sugar, as the final product in sugar production technology, has to contain as low non-sucrose compounds with coloured matters as possible. Ultrafiltration and nanofiltration

could be one of the solutions for a more effective separation of non-sucrose compounds from intermediate products from which sucrose directly crystallises. The separation of non-sucrose compounds by ultra- and nanofiltration is investigated on syrup solution with 40% d.m. content, which is an intermediate product in the phase of sucrose crystallisation. Further, this paper investigates variables in the ultrafiltration and nanofiltration of syrup solutions, such as variations in pore sizes of the polymer membranes, syrup temperatures, syrup flow rates and transmembrane pressures. During ultrafiltration, under the investigated conditions; permeate flux is about 10 times less than water flux (150 l/m²h⁻¹) on the first membrane and 8 times less than water flux (285 l/m²h⁻¹) on the second membrane, while the nanofiltration permeate flux is 15 times less than water flux (320 l/m²h⁻¹). The permeate flux decreases due to the adsorption of non-sucrose compounds by the filter membranes and the resultant increase in resistance to mass transfer. The colour content is about 58% lower by ultrafiltration using membranes. There is no great difference in colour separation between the used ultrafiltration membranes with different pore sizes. Nanofiltration was shown to separate 76% of coloured matter from syrup. In all the examined cases, permeate turbidity could be reduced by 75–80%, according to feed.

Keywords: Sugar syrup, coloured matter, ultrafiltration, nanofiltration

Kralik, G., Ivanković, S., Bogut, I. and Csapó, J.: Effect of dietary supplementation with PUFA n-3 on the lipids composition of chicken meat.
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This paper investigates the possibilities of enrichment of meat with PUFA n-3, especially with EPA and DHA. For this purpose 225 Ross 208 male broilers were divided into 5 groups, each consisting of 45 broilers. From 1st to 21st day of the fattening period broilers were fed with standard diets that contained 22.67% crude protein and 14.19 MJ kg⁻¹ ME. From 22nd to 42nd day broilers were fed with finisher diets, balanced at 20.43% crude protein and 14.18 MJ kg⁻¹. The first group was given F1 diets, which, besides other feedstuffs contained 5% poultry fat; 2nd, 3rd, 4th and 5th group were fed with F2, F3, F4, and F5 diets, which were enriched with marine oil Pronova Biocare Epax 3000 TG in the amount of 0.5%, 1%, 1.5% and 2%, respectively. The obtained research results showed that PUFA n-6 was enhanced from 6% to 11.46% in the lipids of breast muscles, and from 3.71% to 10.44% in the lipids of thigh muscles. PUFA n-6 / PUFA n-3 ratio was lowered from 2.95 to 1.22 in the breast muscles, and 5.35 to 1.60 in the thigh muscles.

Keywords: chicken meat, fatty acids, PUFA n-3

Szalai, M., Szigeti, J., Farkas, L., Varga, L., Réti, A. and Zukál, E.: Effect of headspace CO₂ concentration on shelf life of cooked meat products.
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The shelf lives of major commercial cooked meat products (i.e., Bologna sausage, Italian-type cooked sausage, and cooked ham) packaged under vacuum or modified atmospheres were tested in this study. Samples were taken from commercial meat processing lines, sliced to 1.2 mm thickness and placed overlapped into polypropylene trays sealed with plastic films. The headspace of modified atmosphere packaged formulations consisted of 30% CO₂ and 70% N₂ or 60% CO₂ and 40% N₂, respectively. The samples thus produced were stored under

refrigerated conditions. The values of microbiological, chemical, physical or sensory properties were plotted against storage time, and Gompertz curves were fitted to all time series that changed from an initial to a final value during any period of storage. The influence of headspace CO₂ concentration on the properties of sliced cooked meat products varied considerably and, therefore, it was not possible to specify general rules. However, the presence of CO₂ in the packaging atmosphere slowed down the rate of microbial growth, thereby delaying the spoilage of meat products. A CO₂ level of 60% had beneficial effects on both the microbiological and sensory properties of sliced sausages and cooked ham. It was concluded that cooked meat products packaged under modified atmospheres had a shelf life of 20 days.

Keywords: cooked meat product, shelf life, carbon dioxide, modified atmosphere packaging, vacuum packaging

Banović, M., Miličević, B., Kovačević Ganić, K. and Komes, D.: Characteristics of wine distillates produced in Kutjevo region, Croatia.

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The prospects of quality young wine distillates production have been examined. The base wine was produced from *Vitis vinifera* L. quantitatively dominating grape varieties within the group of the recommended and permitted varieties of Kutjevo vineyards, located in the eastern part of the continental Croatia. Characterisation of wine and distillates was based on chemical and instrumental methods and on their sensory evaluation. Volatile compounds were analysed and identified by GC-FID and GC-MS. The wine varieties Rhine Riesling, Müller Thurgau and Riesling have the potential for the production of quality distillates, suitable for maturation. Pinot White, Traminer and Chardonnay give more acceptable wines than distillates and it is therefore not advisable to use them for distillates production, while the varieties Pinot Gris, Frankovka and Steinschiller are not suitable for the production of distillates.

Keywords: aroma, Kutjevo region, sensory evaluation, wine, wine distillate.

Vuković, V. and Kasalica, A.: Effect of penicillin in concentration below the sensitivity level of biological methods on yoghurt cultures and yoghurt.

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The study was conducted to examine the effect of penicillin (0.003 IJml⁻¹ of milk) in concentration below the sensitivity level of biological methods (Delvo SP and Resasurine test) on yoghurt cultures. According to the results obtained, the stated penicillin concentration prolonged the period of final incubation in the bulk starter (3 h and 20 min) and in yoghurt (3 h and 40 min). The total count of *S. thermophilus* colonies in the bulk starter and yoghurt is also reduced with a loss of one (log 7.32), that is, two logarithmic numbers (log 6.53) compared with the control samples (without penicillin). The total count of *L. bulgaricus* colonies was higher in the control samples compared with the experimental samples. Upon the final incubation period and storage for 18 h at 5 °C, there was a drop in the titratable acidity and an increase in pH values of the control samples. Microscopic examination of the control samples showed a gradual disappearance of streptococci with a complete prevalence

of lactobacilli in yoghurt. Additionally, morphological changes occurred in streptococci (long chains) and lactobacilli (long and irregular rods).

Keywords: yoghurt, penicillin

Şahan, N., Var, I., Say, D. and Aksan, E: Microbiological properties of labneh (concentrated yoghurt) stored without vegetable oil at room or refrigeration temperatures. Pp. 175-182. nsahan@mail.cu.edu.tr

Labnehs (concentrated yoghurts) were made from cow or goat milk (and produced directly from either yoghurt or strained yoghurt) and stored without submersion in vegetable oil at either room or refrigeration temperatures. The results showed that total aerobic mesophilic bacterial counts decreased during storage at both temperatures. Yeast and mould counts, however, increased especially in the samples stored at room temperature due to increased acidity during storage. The number of aerobic spore-forming bacteria decreased, although it was high at the beginning of storage. The number of psychrotrophic bacteria significantly decreased after 60 days in the samples stored at refrigeration temperature and to a smaller degree decreased in the samples stored at room temperature. The statistical analysis showed that the variety of milks and draining of the yoghurts and their interactions had no effect on the growth/survival of total aerobic mesophilic bacteria and psychrotrophic bacteria ($P>0.05$). However, storage time had a significant effect on the growth of aerobic mesophilic bacteria and aerobic spore-forming bacteria ($P<0.01$) and yeast, mould and psychrotrophic bacterial counts ($P<0.05$). No coliform bacteria and *Escherichia coli* were detected in any sample. The labnehs were consumable for a short period of time, if stored at room temperature and for 180 day, if stored at refrigeration temperature.

Keywords: labneh (concentrated yoghurt), storage temperature, microbiological properties

Castillo A. L.A., Mészáros, L. and Kiss, I.F.: Effect of high hydrostatic pressure and nisin on micro-organisms in minced meats. Pp. 183-190. kissif@omega.kee.hu

The effect of high hydrostatic pressure (HHP) and nisin was studied on micro-organisms in minced chicken and beef meat. Pressure in the range of 0-800 MPa and nisin (670 IU g⁻¹) were applied for vacuum packed minced meat. In chicken meat the total viable cell count decreased by 3 log cycles as an effect of HHP at 300 MPa and by 5 log cycles in combination with nisin. The D value is 35-39 MPa for pseudomonads in minced chicken meat. In case of inoculation with *L. monocytogenes*, the cell count in beef meat was reduced only by pressure higher than 200 MPa (“shoulder”) with a characteristic value of D=37-38 MPa. *B. cereus* spores, both dormant and heat activated, were very resistant (D=800 MPa) in beef. However, the survival of pressurised spores after chilled storage (for two weeks at 4 °C) was smaller for dormant spores than for heat activated spores. Efficiency of HHP combined with nisin needs further research work.

Keywords: high hydrostatic pressure, nisin, combined treatment, decontamination

Gökoğlu, N.: The effect of organic acid treatments on the melanosis inhibition and shelf life in shrimp (*Penaeus japonicus*).
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The effect of organic acids on the melanosis inhibition and shelf life on shrimp was investigated. Shrimps were treated with 1% solutions of lactic, citric, acetic acids, sodium metabisulfite (0.3%) and their various combinations. After treatments the shrimps were stored at 4°C and evaluated for melanosis every day and quality changes on every other day. Combinations with sodium metabisulfite were the most effective in delaying melanosis. Citric and lactic acids extended shelf life to a lesser extent but acetic acid had no effect.

Keywords: Shrimp, melanosis, quality, organic acid treatments

Yazici, F.: Effect of pH on microflora of civil cheese during refrigerated storage.
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Microbial properties, correlation between pH and microbial properties, and the effect of pH adjustment on microflora of Civil cheese during refrigerated storage were examined. The cheeses made from skim milks with a pH of 5.35, 5.30, and 5.25 had higher counts of total aerobic bacteria, yeast and moulds, LAB and psychrotrophic organisms than those made from milks adjusted to higher pH values. A highly negative correlation between pH and total aerobic bacteria, yeast and moulds and LAB was observed in Civil cheese.

Keywords: cheese, storage, microflora, pH adjustment