

Editorial: Gould, G.W.: Microbiological safety of new food preservation technologies.
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Chang, Y.K., El-Dash, A.A.: Extrusion-cooking of cassava starch as a pre-treatment for ist simultaneous saccharification and fermentation for ethanol production.
Pp. 219-235. yokic@fea.unicamp.br

Single screw extrusion of cassava starch was evaluated as a pre-treatment for the enzymatic hydrolysis of the extrudate and fermentation to yield alcohol. The acid concentration, barrel temperature and moisture content showed that all the variables were significant. Increasing acid concentration or barrel temperature induced starch depolymerisation with a higher water solubility index and lower water absorption index. At 20 and 24% moisture contents the cold paste viscosity decreased. As a result of the addition of acid during extrusion cooking the degree of starch hydrolysis resulted in low hot paste viscosity. Acid concentration was significant in the production of reducing sugars. At concentrations above 0.024 N, as the temperature increased, the reducing sugar also increased. Nevertheless, at concentrations below 0.024 N, the reducing sugar content showed the opposite result. The best yield of alcohol obtained from the extruded starch was 98.7% (0.56 g of ethanol/ g starch), which, on average, was 5.7% and 6.8% higher than that obtained from starch extruded without acid and from starch gelatinized by the conventional method, respectively.

Keywords: cassava starch, ethanol, extrusion, fermentation

Mierzejewska, D., Kubicka, E.: Effect of temperature on immunoreactive properties of cow milk whey protein. I. α -Lactalbumin.
Pp. 237-246. daga@pan.olsztyn.pl

The effect of heat induced changes on the immunoreactivity of α -lactalbumin (α -la) in whey was evaluated. Whey and acidified α -la solutions were heated for various times at temperatures between 60 and 100°C. After heating, the samples were clarified and the protein content (by Bradford's method), the quantity of α -la (by FPLC method) and the immune response to an anti α -la probe were determined. The samples heated at 80°C were characterized by the highest α -la immunoreactivity properties. Raising temperature up to 90°C and 100°C caused a marked decrease in α -la immunoreactivity. As was found by FPLC method in the samples heated at 60 and 65°C, α -la content changes were not statistically significant. A gradual decrease in the content of α -la was observed with increased temperature and duration of heating.

Keywords: α -lactalbumin, ELISA, heat treatment

Díaz Romero, C., Tort, S., Díaz, E., Pérez-Trujillo, J.P.: Chemical characterization of bottled sweet wines from the Canary Islands (Spain). Pp. 247-256. jperez@ull.es
Samples of sweet wines from the Canary Islands belonging to the Denominations of Origin of La Palma and Lanzarote islands were analyzed in relation to chemical parameters. The main

chemical parameters analyzed demonstrated that these wines fulfil all the legal requirements since the content of all components tested falls below the maximum concentration admissible. Applying techniques of multivariate analysis (principal component, discriminant and cluster analysis), a complete differentiation could be achieved between the wines according to the island of production using only alcohol degree and isobutanol which are chemical parameters related with the elaboration process.

Keywords: Canarian sweet wines; chemical analysis; quality control; multivariate analysis.

Keles, A., Dogruer, Y., Ucar, G., Guner, A.: Preacidification treatment of milk used in Halloumi cheese manufacture.

Pp. 257-267. akeles@selcuk.edu.tr

In this study, Halloumi cheese samples were produced from preacidified cow's milk. Glucono-delta-lactone (gdl), lactic, citric and acetic acids were used in preacidification treatments. Experimental cheese samples were produced in five different groups. In four groups, preacidification was applied with acidulant addition to milk. The last group served as control group and preacidification was not applied. The cheese samples were vacuum packed and ripened at 7 ± 1 °C for 90 days. The changes in some chemical, microbiological and sensory properties of the Halloumi cheese samples were investigated during the ripening period. Gdl and lactic acid were found more suitable than citric and acetic acids as an acidulant in Halloumi cheese production.

Keywords: preacidification, Halloumi cheese

Brandt, S., Lugasi, A., Barna, É., Hóvári, J., Pék, Z., Helyes, L.: Effects of the growing methods and conditions on the lycopene content of tomato fruits.

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Recently several studies have focused on the antioxidant activity of lycopene such as quenching of singlet oxygen and scavenging of peroxy radicals. These properties may play a role in the prevention of different cancer and heart diseases. Tomato is one of the most important sources of lycopene. Lycopene content is influenced by many factors such as agricultural practices (greenhouse, open field, varieties, water supply, fertilisation), soil, climate factors (temperature, moisture, solar radiation), harvesting date and degree of maturity. Primarily the effect of water supply was investigated on lycopene content of Daniela F1 tomato harvested in glasshouse. The lycopene content of fruits supplied with 50% of optimal water intake was higher (86.5 mg kg⁻¹ f.w.) than that of fruits supplied with 100% of optimal water intake (62.5 mg kg⁻¹ f.w.). The tomato variety Daniela F1 was grown in glasshouse and in the field by stick production, as well. Significantly higher lycopene content was observed in tomato harvested in glasshouse (83.0 mg kg⁻¹ f.w.) than in field (59.2 mg kg⁻¹ f.w.), at every gathering time. Lycopene content of three different varieties (Daniela F1, Delfine F1 and cherry tomato) grown under same conditions was also investigated. The highest concentration of lycopene was detected in cherry tomato (77.4 mg kg⁻¹ f.w.) while Daniela F1 with 59.2 mg lycopene per kg and Delfine F1 with 69.6 mg lycopene per kg had significantly lower level.

Keywords: tomato (*Lycopersicum esculentum*), lycopene, greenhouse, varieties, temperature, water supply

Stehlik-Tomas, V., Grba, S., Stanzer, D., Vahcic, N., Gulan Zetic, V.: Uptake of iron by yeast cells and its impact on biomass production.

Pp. 279-287. vtomas@pbf.hr

Procedures for the production of *Saccharomyces cerevisiae* biomass enriched with iron and the effects of the iron ions addition into the molasses medium on the yeast growth and the production of ethanol were studied. The growth of the yeast *S.cerevisiae* and the ethanol production in media with different concentrations of Fe were followed in the batch process under semiaerobic and anaerobic conditions. The highest biomass concentration and ethanol production were achieved in the medium with 0.6-0.8 g l⁻¹ of Fe under both (semiaerobic and anaerobic) conditions.

Kinetics of the iron ions accumulation in yeast cells during 24 hours of growth in the batch process under semiaerobic and anaerobic conditions were monitored. In anaerobic conditions the maximum uptake (10 mg g⁻¹ d.m. yeast biomass) was obtained after 12 hours of fermentation, while in semiaerobic conditions a four times lower uptake (2.5 mg g⁻¹ d.m. yeast biomass) was obtained after 16 h of fermentation.

Keywords: fermentation, iron uptake, *Saccharomyces cerevisiae*, semiaerobic and anaerobic conditions

Nagy, E., Körmendi, L.: Determination of fat content in meat by pulsed nuclear magnetic resonance (P-NMR) technique.

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Rapid methods are often required for the in-line process control of the fat content of meat in the meat processing plants. This paper reports on the results obtained with the pulsed magnetic resonance technique (P-NMR) applied for determining fat content in fresh meat. The interfering moisture content of meat was removed by microwave drying and the dried residue was quantitatively transferred into the P-NMR tubes. The total analysis time was about 50 min. Experiments were performed with rendered pure pork, beef and goose fats, sunflower oil and with lean pork - fat and lean beef - tallow mixtures (batters).

The regression (prediction) equations (intensity of P-NMR signal vs. fat content determined with the Soxhlet reference method) of the sunflower oil and fat samples did not differ appreciably. Consequently, contrary to the results obtained with the CW-NMR technique, the variability of the fatty acid composition of the examined fats and oil had no substantial effect on the regression (prediction) equations in this case. On the other hand, there was a considerable difference between the regression lines of the lean pork-fat and lean beef-tallow mixtures. So, because of the interfering effect of the non-fat dry matter and the type of meat on the intensity of P-NMR signal, this technique can only have a restricted practical application in the in-line process control of fat content of meats.

Keywords: P-NMR, fat determination, meat analysis, NMR

Száráz, L., Kánai, I., Beczner, J.: A complex way of assessing biodegradability of polymer films – a practical approach.
Pp. 295-309. n.szaraz@cfri.hu

Commercially available starch-based biodegradable films were tested for the assessment of biodegradability in accordance with standardised and non-standardised methods providing possibilities to directly monitor microbial activity. A method originating in the measurement process of the biological activity of soils was modified and applied during according to the recommendation of international standards to test polymers under controlled composting conditions. Based on the results of our experiments it is not possible to clearly assess the biodegradability of films based exclusively on the measurements of the produced CO₂ during the degradation process. Additional measurement on the microbial activity in the nearest milieu of the samples, as well as the microscopic investigation of the samples together with the CO₂ production provide a complex information on biodegradability.

Keywords: biodegradation; starch-based films; controlled composting conditions

Koc, K., Alpaslan, M.: Microwave finish drying to improve physical and chemical properties of apricots.
Pp. 311-315. malpaslan@inonu.edu.tr

This study investigated physical chemical properties of microwave finish dried apricots. Microwave treatment caused significant ($P < 0.05$) decrease in SO₂ content of apricots at power levels over 400W. As the power level increased moisture content decreased. No significant ($P > 0.05$) alteration in L value was observed. Redness property (a value) increased significantly ($P < 0.05$) with the increase in microwave power intensity. The taste and overall acceptance scores of the microwave finish dried apricots were smaller ($P < 0.05$) when high (over 400 W) level of microwave power used. Microwave finish drying method reduced the time of drying.

Keywords: apricot, microwave, drying, colour, sensory properties

J. Šalomskienė a *, **A. Paškevičius b** and **I. Mačionienė a:** Monitoring yeast species in quarg, quarg products and their production environment during the manufacturing process.
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A total of 65 yeast cultures were isolated from quarg and its products, from the air of the production facilities and from rinses of equipment. The yeast isolates were identified and their proportion was determined.

Of these isolates, 8 species were identified in the rinses of equipment, 2 from the air of the production facilities, and 9 from the final product, i. e., quarg and quarg products. Four species of the yeasts isolated from quarg, namely *Debaryomyces hansenii*, *Trichosporon cutaneum*, *Kluyveromyces marxianus* var. *marxianus* and *Candida zeylanoides* were also present in the rinses of equipment. *Debaryomyces hansenii* and *Trichosporon cutaneum* were the predominant species both in the rinses of equipment and in the final product.

Keywords: yeasts, species, quarg, environmental sources, manufacturing process

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