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The aim of the study was to compare the quality of edible parts of three experimental groups of carp, i.e. pure line of Přerov scaly carp (PS), hybrid line of Přerov scaly carp and northern mirror carp (PSxM72), the hybrid line of Přerov scaly carp and Ropsha scaly carp (PSxROP), with the quality of edible parts of control hybrids of Hungarian and northern mirror carp (M2xM72) in harvest size (K3). The chemical composition of edible parts of the experimental groups of carp (PS, PSxM72, PSxROP) was comparable with that of the control group (M2xM72). The highest fat content (89.8±1.94 g kg-1) was 0.05). Of EAAsum (48.54±0.31%)<found in the fillet of PSxROP hybrids (P in the fillet of PSxROP hybrids, Lys (9.17±0.47%) and Leu (8.28±0.49%) were the most abundant. In comparison with organs, their fillet 0.01), the ovaries more Val<contained more His (4.38±0.34%, P 0.01), Lys<0.01) and testes more Ile (8.13±0.53%, P<(11.65±0.37%, P 0.01). In the<0.01) and Arg (10.44±0.27%, P<(11.70±0.63%, P 0.05) was the most<hepatopancreas of PSxROP hybrids Phe (4.86±0.25%, P abundant. The fillet of PSxROP hybrids contained SFAsum (21.37±0.46%), MUFAsum (64.20±0.57%) and PUFAsum (14.56±0.34%) in the ratio of 1:3:0.7. Of the fatty acids PUFAn-3 sum (2.39±0.09%), the most abundant in the fillet of PSxROP hybrids was the essential linolenic acid C18:3n-3 (0.86±0.09%) and the eicosapentaenic acid C20:5n-3 (0.69±0.09%) and the docosahexaenic acid C22:6n-3 (0.35±0.02%). The PUFAn-6/n-3 ratio in the fillet of PSxROP hybrids was 3.25±0.18. The quality of edible parts of PSxROP hybrids was comparable with that of commercially farmed M2xM72 mirror carp. From the point of view of chemical evaluation of the quality of edible parts, PSxROP hybrids can be recommended for commercial farming in aquacultures.

Keywords: carp, chemical composition, protein, fat, amino acid, fatty acid

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The textural properties and hydration capacity of legumes in general and of beans in particular is a subject about which much research has been done. However, at present there is still no practical answer to the “Hard to Shell” and “Hard to Cook” effects. The present investigation studies 14 varieties of recently picked beans that were grown in Mexico. The beans were classified by size using K-means multivariate analysis, and three fractions were obtained for each variety: large (L), medium (M) and small (S). These fractions were evaluated for hardness, water absorption rate and total water absorption. It was found that the small bean fraction of the varieties studied had the lowest hardness values in comparison to the medium and large fractions. This same behavior was observed for the water absorption rate and total

water absorption; the smaller beans absorbed water more quickly and had greater total water absorption than the other fractions. One kind of bean (Pinto Villa) proved to be much harder than the other varieties. The total water absorption increased and hardness decreased for beans with greater ash content, but no correlation was found between these two properties (water absorption and hardness) for protein and fiber content.

Keywords: hardness, bean size, water absorption, cooking

Rajeev Bhat, Sridhar. K.R, Bhushan, B and Sharma, A: Canavalia cathartica free radicals studied by ESR. Pp. 337-345. sirikr@yahoo.com

ESR technique was used to detect free radicals present naturally or formed after employing various food processing methods (irradiation, microwave roasting, pan frying and pounding) by entrapping small quantities of seed portions (seed coat and cotyledon) of Canavalia cathartica in potassium chloride powder in ESR quartz tubes. ESR signal at g=2.002 was more prominent in seed coat than the cotyledon. Application of ionising radiation (gamma and electron beam, 10 kGy) resulted in enhancement of signal at g=2.002 accompanied by a weak triplet (aH=3mT) in seed coat, which can be used as a suitable method of detection of irradiation. Some of the commonly employed food processing methods also generated free radicals (at g=2.002) more or less comparable to irradiation. Results of the present study might prove to be beneficial for the consumers who are interested to be acquainted with the status of free radicals in legumes after conventional or modern food processing and preservation methods.

Keywords: Canavalia cathartica, ESR, free radicals, ionising radiation, microwave roasting, pan frying, pounding

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Guler, P and Ozkaya, E.G: Sclerotial structures of Morchella Conica in agar media with different carbohydrates. Pp. 347-357. perihangler@yahho.com; annem40@gmail.com

In this study, the effects of various carbon sources for Morchella conica sclerotium formations were investigated under in vitro conditions. The formations of sclerotial initials, which improved from hyphae of Morchella conica, were obtained by using different carbohydrates. Vegetative mycelia were developed very well in agar media, containing malt extract (MEA), wheat (WA), potato dextrose (PDA) and complete medium yeast extract (CYM), however, moderate development occurred in defined media, containing glucose, sucrose, maltose and starch. The carbohydrate concentrations were prepared as 0.0%, 0.25%, 0.75%, 0.50%, 1.00% and 1.25%. Whole wheat agar and potato dextrose agar media consisting of glucose, sucrose and 0.25%, 0.75% and 1.25% starch excluded, while other cultural environments supported sclerotial formations. Sclerotial structures were examined morphologically and anatomically. The pigmentation changed from yellow to orange and brown. Time sclerotial formation varied from 10 days up to 7 months. Pigmentation, structure and quantity of sclerotia were taken as morphological criteria. Anatomical properties of sclerotia were obtained on light microscopy and scanning electron microscopy. Generally, sclerotial cells were very thick and spherical.

Keywords: Morchella conica, sclerotia, carbohydrates, vegetative mycelium

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Gustaw, W: Production and rheological properties of whey protein – polysaccharide mixed (composites) gels. Pp. 359-365. waldemar.gustaw@ar.lublin.pl

Formation and rheological properties of mixed protein-polysaccharide gels (composites) was studied. The composites consisted of whey proteins gelling separately, which were surrounded by polysaccharide gel. The polysaccharide gels were obtained from κ-carrageenan and κ- carrageenan-galactomannan (guar gum and locust bean gum) mixtures. The texture of gels obtained was examined by their compression and bending test. The composite gels obtained from 14% WPI solution and the 1.5% mixture of κ-carrageenan with locust bean gum in a 1:1 ratio exhibited a higher shear stress value at fracture in comparison to WPI gels, but they were less resistant to fracture in the bending test. The texture of gels was highly influenced by pH.

Keywords: gel, composite, carrageenan, locust bean gum, bending test, texture, whey proteins

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Mukhopadhyay, S. Mukherjee, P.S and Chatterjee, N.C : Optimization of enzymatic hydrolysis of water hyacinth by trichoderma reesei vis-a-vis production of fermentable sugars. Pp. 367-377. nc_chatterjee@rediffmail.com

Aquatic weed water hyacinth was evaluated for its potential to be used as feedstock for fermentable sugar production via enzymatic hydrolysis. Critical factors (pretreatment of substrate, concentration of substrate, incubation period, pH, incubation temperature) affecting enzymatic hydrolysis of water hyacinth were optimised for maximum production of fermentable sugars. Enzyme (mainly cellulase) produced by Trichoderma reesei ATCC 26921 in a simple medium containing the plant biomass as the sole carbon source was directly used at a particular concentration for hydrolysis. It was observed that acid-alkali pretreated water hyacinth was far more accessible to cellulolytic enzymes than untreated one and hence was hydrolyzed to a greater extent. Maximum hydrolysis (41.7%) was obtained with 4%(w/v) pretreated water hyacinth after 72 h of incubation at pH 5.2 and at a temperature of 45°C. With a view to enhance the percentage of enzymatic hydrolysis, culture metabolite (enzyme source) of T. reesei -glucosidase mutant, Aspergillusβwas supplemented with enzyme from a -glucosidase enriched cellulase preparation facilitatedβphoenicis. This -glucosidaseβfurther enhancement (49.7%) of hydrolysis at FPase to ratio of 1:1.2. Gas-liquid-chromatographic analysis of the hydrolyzed broth, thus obtained under optimal conditions, revealed the presence of glucose (12.5 g l-1) as the most predominant fermentable sugar besides having the presence of xylose, arabinose, mannose and galactose. This widens up the feasibility of utilising such hydrolysate as a cheap carbon source (glucose and to some extent xylose) for yeast fermentation to produce fuel ethanol.

Keywords: -glucosidase, Trichoderma reesei, Aspergillus phoenicisβenzymatic hydrolysis, cellulase,

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Grausgruber, H. Miesenberger, S. Schoenlechner, R and Vollmann, J: Influence of dough improvers on whole-grain bread quality of einkorn wheat. Pp. 379-390. heinrich.grausgruber@boku.ac.at

Wholemeal products of einkorn wheat (Triticum monococcum L.) could help to elevate the

daily uptake of both dietary fibre and lutein, compounds which can assist the prevention of coronary heart disease and age-related macular degeneration, respectively. However, gluten strength and rheological properties of einkorn wheat are low and bran particles are reported to decrease bread volume and crumb elasticity of flours. It was demonstrated that the application of individual enzymes and/or emulsifiers or their application in mixtures can significantly improve bread volume and crumb firmness of whole-grain einkorn breads. Crumb porosity characteristics, however, were not affected. Synergistic interactions between the dough improvers can be supposed. The antithesis between the application of dough conditioners and the organic production of einkorn wheat, and optional methods for optimisation of whole-grain einkorn bread are discussed.

Keywords: Ancient wheat, baking, emulsifier, enzyme, image analysis, texture

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V. Bušić, V. Kovač, S. Gašo-Sokač, D. and Lepeduš, H: Antioxidative activity of anthocyanins from sour cherries. Pp. 391-397. valentina.simunic@ptfos.hr

The aim of this study was to examine antioxidant activities of the anthocyanins isolated from different sour cherry (Prunus cerasus) cultivars. DPPH radical method and photochemiluminescence detection method were employed. The effect of isolated anthocyanins on peroxidase activity was also investigated. In the DPPH method, methanol extract of isolated anthocyanins was employed and results showed the highest radical-scavenging activity of anthocyanins isolated from one genotype of Cigančica cherry (genotype VN 10-11), Petrovaradinska, and Oblačinska cherry cultivar. Integral antioxidative capacity was determined by luminometry (Photochem), calculating the ascorbic acid equivalents. The best reducing power was shown by anthocyanins isolated from Maraska and Petrovaradinska cherry cultivars. Peroxidase activity of fresh plant material was determined and the influence of anthocyanins on peroxidase activity was investigated.

Keywords: anthocyanins, Prunus cerasus, antioxidative activity, DPPH, photochemiluminescence, peroxidase activity

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Oszvald, M. Tömösközi, S. Tamás, L and Békés, F: Preliminary study to investigate the role of rice and added wheat protein in the mixing properties of different rice flours. Pp. 399-408. tomoskozi@mail.bme.hu

Structure and composition of wheat storage proteins and functional properties of wheat gluten are well studied; therefore several methods and instruments are available to determine these properties. The investigation of functional properties of rice proteins, depending on the different goal of utilisation, has not been well established, yet. In this study, the rheological properties of four varieties of rice flour were studied using a 50 g Farinograph demonstrating the mixing properties of rice flours and the alterations of these properties caused by the supplementation of wheat. The considerable differences identified on the mixing curves of different rice flours indicate that the investigation of mixing properties can be one of the useful approaches for the characterisation of functional properties of rice dough. The large effects of the addition of wheat gluten on the mixing properties of rice flours demonstrate the possibility of using rice flour and dough as a wheat protein free model system for the in vitro investigation of the functional roles of wheat storage proteins.

Keywords: rice flour, rheological properties, farinograph, addition of wheat gluten