Antioxidative Activities of Mushroom (*Pleurotus*) Extract on Beefburger in comparison with Other Synthetic and natural Antioxidants

**Abstract** The antioxidant’s ability of mushroom extract (prepared from edible mushroom *Pleurotus*) to stabilize color of uncooked and cooked burger was evaluated in comparison to certain types of antioxidants (α-TOC / BHA). The result showed that the lipid oxidation and color shelf life of uncooked and cooked burger upon addition of 2, 5 and 8 ml of mushroom extract (ME) per 100 g of meat, caused a prolong the ice storage period for 5 days at refrigerator temperature for uncooked and cooked burger in comparison to the control samples. The addition of 8 ml of ME to cooked burger (8g dried mushroom and 8 ml ME/100g, respectively) and for uncooked burger was found to be more effective than the addition of BHA (0.02 %) and α-TOC (500 ppm) with regard to lipid oxidation, change in color, TVN, sensory properties. Moreover, the result showed that the mushroom extract is a potential antioxidant activity (ergothioneine) which had the ability to stabilize color and lipid oxidation of meat during storage. Therefore, the it is recommended that mushroom extract should be considered by food industries especially meet industries for its potential antioxidant activity.

**Key words**: Meat discoloration, lipid oxidation, mushroom extract, chemical composition, metmyoglobin formation, Butylated hydroxy anisole, α-tocopherol, ergothioneine.

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Ban bread quality as affected by low and high viscous Hydrocolloids gum

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Abstract

The impact of some hydrocolloids agents (Arabic gum and locust bean gum) at 5% and 10% individually and as a mixture on ban bread quality was investigated. Bread quality was evaluated according to the following physical parameters: dough fermentation time (min.), loaf height (cm), index to volumes (cm), Volume (cm³), density (g/cm³), area and degree of softness (mm/sec) before and after storage. Moreover, sensory evaluation of the product (Appearance, color, Cell uniformity, moistness, odor, taste, Overall acceptability) was carried out by 10 panelist and proximal composition was determined for all the fortified samples. The study showed that the highest volume was detected in fortified bread sample with mixture gum (at 5%) in compare to the control and the other samples. In addition, hydrocolloids improved bread softness after the storage period (for 1 w.K. at -10 C°). Sensory evaluation results revealed that ban bread samples supplemented with both types of gum were acceptable. Scores given to bread fortified with Arabic gum at different levels were found to be close to that of the control sample for all the evaluated characteristics. The study concluded that gum under the present investigation improved moisture retention and maintained the overall bread quality after storage.

Keywords: Ban bread; Arabic Gum; Locust bean gum; bread softness; Quality evaluation, proximal composition.
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Biological Evaluation of Sugarcane bagasse and filtermud

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Abstract

This study was undertaken to investigate the biological effect of the most acceptable level of sugarcane by-products (bagasse and filtermud) which achieved better quality for the fortified bakery products (phase I of the study) on weanling rats. Moreover, screen the biological effect of feeding high level (exceeded the acceptable level) of sugarcane by-products (as a source of fiber) on blood hematocrite and hemoglobin in weanling rats. The study was carried out on 30 male albino weanling rats (weight 55-65 g) that were divided into 5 groups (6 rats/group). Group (1) fed on basal diet only (control group), group (2) and (3) fed on basal diet + 5 and 10\% Scb respectively, while group (4) and (5) fed on basal diet + 2.5 and 10\% Scfm, respectively for 28 days. At the end of experimental period rats were scarified, organs (spleen, liver, hart and kidneys) were removed and weighed. Blood samples were collected and serum was separated for estimating cholesterol, glucose, iron, blood hematocrite and hemoglobin. The activities of liver enzymes (AST and ALT) were estimated. Part of intestine was examined for histobathological changes. The results showed significant reduction (P<0.05) in cholesterol and glucose levels with increasing the levels of Scb and Scfm, while there was a significant (P<0.05) increase in blood hemoglobin and iron in rats fed on 10\% Scfm. However, erosions were observed histobathologically in the epithelial lining of the intestinal in rats fed on 10\% (Scb).

(Key words: biological effect, sugarcane by–products, minerals profiles, cholesterol, blood glucose, liver enzymes).
References


The Impact of Bottle Gourd Seeds Husks on Rheological Properties of Pan Bread and Lipid Profiles in Hypercholesterolemic Rats

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Abstract: The study was carried out to investigate the effect of different levels of roasted bottle gourd seeds husks (BRSH) as source of dietary fiber and protein on rheological properties and quality of fortified wheat pan bread (organoleptic and physical) and its biological effect on lipids profile of rats fed on hypercholesterolemic diet. Fortified pan bread was carried out with either roasted BGSH or wheat bran (WB) at different percentages. For the biological study, male rats were divided into five groups; the first group was served as a normal control. The other four groups were fed on hypercholesterolemic diet: the first served as control positive, the second fed on raw and the third fed on roasted BGSH at 10% and the fourth group fed on WB at 10%, the study was carried out for 30 days. The result showed that pan bread fortified with 10% roasted BGSH had acceptable qualities than that of the other levels of fortification. This level (10%) induced increases in gluten index and enhancing the quality of bread dough. Also, 10% roasted BGSH caused a beneficial effect in modulating the lipids profile of rats fed on hypercholesterolemic diet. Roasted BGSH should be considered for its health benefits as a good source of dietary fibre, also it can be recommended for bakery fortification.

Keywords: Bottle gourd seeds husks • Chemical composition • Rheological properties • Pan bread • Biological effect • Hypercholesterolemic rats • Lipids profile

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Functional Attribute of Chickpea and Defatted Soybean Flour Blends on Quality Characteristics of Shortening Cake

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Abstract

Quality attribute of shortening Cake fortified with two different levels (5% and 10%) of chickpea and soybean flour blends each individually was investigated. Physically, Sensory and nutritional properties of the prepared cake samples were evaluated. Fortification with each of the two levels of soy flour and (5%) chickpea flour did not negatively affect the sensory characteristics of the final product. All products were found to be acceptable as recorded the panelist in terms of color (external/ internal), appearance, texture, taste and overall acceptability. The study reported an increase in mineral composition (K, Zn, and Fe) of the fortified cake samples. Moreover, there was an increase in amino acids composition of the fortified cake as compared to the unfortified samples. In addition, the high quality protein of cake fortified with each of chickpea and soybean composite flour as calculated by chemical scores was reported to be higher than that of the unfortified cake sample in almost essential amino acid. The study recommended that the technology of using composite flour should be encouraged among food industries to make economic use of local raw material and to produce high quality food products such as shortening cake particularly for the populations of developing nations.

Key words: Composite flour, legumes, shortening cake, nutritive value, sensory evaluation, physical properties, minerals composition, amino acid.
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Bread Quality as a Result of the Addition of Germinated and Non-Germinated Soybean Flour. Food Bioprocess Technol, 1:152–160


Impact Of Sweet Sorghum Syrup On The Nutritive Value and Quality Of Some Baked Products

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Abstract

The study was undertaken to plant sweet sorghum, produce syrup from two different stages: milky (M) and dough (D) and incorporate the syrup into products (cake and bread) as a replacement to sucrose (30, 50, 70, 100%). Chemical compositions (moisture, ash, total proteins, total fats, reducing and non-reducing sugars, vitamins: C, B1 and B2, carotenoid, minerals: Ca, Na, K, P and Fe) for both raw juice and syrup were determined and quality of the prepared products was evaluated (organoleptic and texture properties as well as proximal composition). The final Brix of the produced sorghum syrup was 75 ± 1 degree (using Refrectometer). The results indicated that syrup at M stage had lower contents of protein, ash, total sugars, reducing sugars (2.03, 2.82, 84.23 and 67.89%, respectively) and higher contents of maltose and maltotriose. Higher quality and intense of syrup sweetness was obtained at the D stage (before full maturity of plant). Generally, products' density increased upon using syrup from any of the two stages. Prepared bread with syrup (up to 70%) maintained better and acceptable physical properties. Replacement of sucrose by sweet sorghum syrup improved texture properties of cakes and bread upon storage. Cakes prepared with syrup up to 50% syrup at D stage tended to be red-brown while bread tended to be yellows – red in color. Cakes with 30% syrup at D stage showed better scores (mean ± SE) for sweetness, odor and general acceptability. Whereas, bread with levels of (50 and 70%) syrup at D stage had better characteristics with regard to taste, sweetness, odor and tenderness. Products prepared with sorghum syrup of any stages (M and D) had higher values of calcium, phosphor, sodium, potassium and iron than control. The study recommended that suitable stage of maturity (dough stage) should be considered for the production of sweet sorghum syrup. Sweet sorghum syrup could be commercially used as a replacement for sucrose at level up to 50%.

(Key words: sorghum, syrup, cake, bread, organoleptic, texture, proximal, milky stage, dough stage).
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Food Application and Fortification with Selected Sugarcane By-Products.

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Abstract
This study was conducted to evaluate quality and nutritive value of bakery products (bread and chocolate cake) fortified with different levels of sugar cane by-products: bagasse (Scb) and filtermud (Scfm). The study included preparations and evaluations (objective, organoleptics and proximal compositions) of fortified products (bread and chocolate cake) with different levels of Scb (2.5, 5 and 10%) and Scfm (2.5, 5 and 10%). The most acceptable fortified products (5% Scb and 2.5% Scfm) as well as the control (unfortified) were subjected to proximal composition determinations: moisture, carbohydrates, protein, lipid, ash, total fiber and minerals (Na, K, Ca, P, Fe and Zn) to evaluate their nutritive value as % relative to control and per serving size. The results showed increases in dough water uptakes and development time of bread with increasing Scb and Scfm levels of fortification. Bread and chocolate cake fortified with 5% Scb or 2.5% Scfm had better characteristics. Bread fortified with 5% Scb had higher composition of fiber (738.46 %), sodium (Na), calcium (Ca), iron (Fe) and zinc (Z) and lower values of potassium (K) and phosphorus (P) as % relative to control (unfortified). Bread fortified with Scfm had higher composition of protein, fiber, and lipid than control. Chocolate cake with 5% Scb as % relative to control value showed higher content of Na, K, Ca, Fe and Zn (100.78, 100.73, 103.44, 111.77 and 101.18 %, respectively) and lower contents of (P). Considering the economic principle of optimal use of industrial wastes by-products and from the outcomes of the present study, sugarcane by-products may be valuable for bakery products fortification. Further studies should be carried on toward improving the characteristics of the final product to maintain higher acceptability and product quality. On the other hand, studies should be carried on to investigate the biological effect of these selected sugar cane by-product especially with regard to composition of fiber.

(Key words: Bagasse, filtermud, sugar cane, bakery, nutritive value, fortification).
References


Anti-Hyperglycemic Effects of Okara, Corn Hull and Their Combination in Alloxan Induced Diabetic Rats

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Abstract: Okara and corn hull are both considered waste by-products that are rich in dietary fiber. The present study was carried on to investigate the hypoglycemic effects of okara, corn hull and their combination in diabetic rats. Diabetes was induced in male Sprague-Dawley rats by intraperitoneal injection of 120 mg/kg alloxan monohydrate in saline. Diabetic rats were then randomly divided into five groups and received either normal diet (positive control) or diet supplemented with 10% of okara, corn hull individually and mixture of them (50:50) for 4 weeks. Chemical composition and total phenolic content of both okara and corn hull were estimated. The studied parameters included fasting blood glucose, serum insulin and glycosylated hemoglobin levels, changes in body weights, feed intake and the histopathological changes in the spleen. Results showed that okara contained significantly higher protein and fat than that of corn hull. Total dietary fiber and polyphenols values were found to be significantly greater in corn hull than in okara. Diabetic rats fed diets supplemented with either okara or corn hull individually or a mixture of both gained less weight than that of the diabetic control group. Compared with positive control group, all treatments caused a significant reduction in fasting serum glucose levels, glycosylated hemoglobin and significant increase in serum insulin. The effect was more pronounced in the okara + corn hull supplemented group. Supplementation of either okara or corn hull improve to some extent the histopathological changes observed in the pancreas compared with positive control group. Significant islet structure restoration was observed in diabetic rats on okara+ corn hull supplemented diet as compared with the positive control group. Our findings provided evidence that the combination of okara and corn hull in the diet of diabetic patients might be of great beneficial effects in glycemic control and in reducing the risk of diabetic complications. Further research is required to determine the other health and nutritional benefits of these by-products.

Key words: Okara • Corn hull • Diabetic rats • Chemical composition • Insulin • Fasting glucose • Glycosylated hemoglobin • Spleen histology

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