

# Development of Innovative Food Product



Research article

## Effect of Thai hoary basil (*Ocimumcanum* Sims.) seed mucilage on fat reduction and quality characteristics of chicken salt soluble protein gel and low-fat meat products

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### Abstract

Mucilage from Thai hoary basil seed (HBM) from solvent extraction was investigated (ratio of seed to water, soaking temperature, soaking time) to determine the optimal conditions for using as fat replacer in Chinese sausage and frankfurter sausage. The optimal extraction conditions were a ratio of seed to water of 1:30 and soaking at 40°C for 30 min. A gel model of HBM, pork back fat (BF) and chicken salt soluble protein gel (SSPC) was developed at 2.0% and 2.5% NaCl, which improved the water holding capacity (WHC), textural parameters and gel strength of the SSPC. The gel model with 40% fat reduction containing 8.11% HBM, 12.16% BF, 79.73% SSPC and 2.5% NaCl had the highest storage modulus under frequency period (0.1–100 rad/s), indicating the strongest gel structure, and had the highest WHC (71.85%) and similar textural properties to the model with BF alone. This model produced Chinese sausage with increased hardness, gumminess and chewiness; however, the color, water activity, microbial count and sensory scores were not significantly different from the control. On the other hand, this gel model significantly reduced the hardness, gumminess, chewiness and WHC of frankfurter, which resulted in increased cooking loss. The color, microbial count and sensory scores were not significantly different from the control. The final products were acceptable with liking scores of 6.0–6.6. The quality changes were not detected by consumers due to the synergistic texture contribution of HBM and BF being comparable to some tested commercial products (20% fat).

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## Physicochemical and sensory characteristics of reduced fat-low sugar Chinese pork sausage as produced by chitooligosaccharide using commercial pectinase hydrolysis

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### ABSTRACT

The production of chitooligosaccharide (COS) from chitosan (molecular weight [MW] at 362 kDa and degree of deacetylation [%DD] at 100) using commercial enzymatic hydrolysis (commercial pectinase, Pectinex® Ultra SP-L) was investigated. The commercial pectinase hydrolyzed (COS) chitosan was produced by optimal condition (i.e., pH of sodium acetate at 4.0, enzyme:substrate ratio at 1:4, and incubation time at 180 min). This condition yielded COS with highest yield (98.0%). COS possessed %DD at 100 and MW at 99.77 kDa. The result in this study implied that COS can be easily dissolved in dilute organic acid and water. COS was applied to improve the quality of reduced fat-low sugar Chinese pork sausage. The shelf life of sausage with 0.5% and 1.0% w/w COS was extended from 7 days (control) to 14 days, when packed in plastic bags (Poly Ethylene, PE) at room temperature. Moreover, the inside color, skin color, gumminess, chewiness and proximate compositions of the sausage did not affect by COS ( $p > .05$ ). The produced sausage was accepted by consumers.

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ORIGINAL ARTICLE |  Full Access

## Healthy brown rice-based extrudates containing straw mushrooms: Effect of feed moisture and mushroom powder contents

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### Abstract

This study was carried out to compare the nutritional values, total phenolic content (TPC), and antioxidant activity (AOA) of straw mushroom between egg-shaped (ME) and fully expanded pileus (MF) stages. Effects of three levels of feed moisture (FM: 13, 16, and 19%) and four levels of straw mushroom powder (MP: 0, 10, 15, and 20) were also investigated. It was set a constant barrel temperature profile due to temperature is not a factor for this study. The result showed that MF had higher nutritional values than ME. Increasing MP resulted in increased true density (TD), TPC, and AOA but decreased expansion ratio (ER), lightness, and texture hardness of extruded snacks. Increasing FM resulted in increased TD and texture hardness but decreased ER, lightness, TPC, and AOA of extruded snacks. The optimum formulation of extruded snacks predicted by RSM was 13–14% FM and 14–17% MP. This study demonstrated that it was possible to incorporate straw mushroom and brown rice mixtures into extruded snacks that were nutritious and acceptable to consumers.

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## Characteristics of sausages affected by reduction and partial substitution of pork backfat with pre-emulsified soybean oil

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### ABSTRACT

Improvement of nutritive profile of pork sausages was performed by fat reduction and partial substitution of backfat with soybean oil (SBO). The control sausage was made from pork backfat. For the studied samples, SBO in native and pre-emulsified forms was used for partial substitution of backfat at 25% (by wt of backfat) to produce sausages with various fat contents (30, 20, and 10%). Discontinuity of protein matrix could be observed with increasing fat content, especially for addition of pork backfat. Improvement on product stability could be achieved using SBO, especially pre-emulsified form, to partially replace animal fat. Better dispersibility of the SBO droplets through the meat matrix compared to backfat globules was suggested by the greater continuity in the microstructure of the sausages with SBO. For the sausages supplemented with pre-emulsified SBO, the non-meat protein used as emulsifier could further strengthen the protein network, thereby resulting in enhanced product stability and retained textural attributes of the sausages. The fish protein isolate presently employed as emulsifier to prepare SBO emulsion could be promisingly used to produce more nutritive sausages by providing adequate stability.

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