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Development and physicochemical analysis of chinese steamed
buns incorporated with sugarcane bagasse powder / Ten Chee
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DEVELOPMENT AND PHYSICOCHEMICAL ANALYSIS OF CHINESE STEAMED
BUNS INCORPORATED WITH SUGARCANE BAGASSE POWDER

By

Ten Chee Shan

Research Report submitted in partial fulfillment of
the requirement for the degree of
Bachelor of Food Science (Food Technology)

DEPARTMENT OF FOOD SCIENCE
FACULTY OF ARGROTECHNOLOGY AND FOOD SCIENCE
UNIVERSITI MALAYSIA TERENGGANU

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ENDORSEMENT

The project report entitled **DEVELOPMENT AND PHYSICOCHEMICAL ANALYSIS OF CHINESE STEAMED BUNS INCORPORATED WITH SUGARCANE BAGASSE POWDER** by Ten Chee Shan, Matric No. UK 17174 has been reviewed and corrections have been made according to the recommendations by examiners. This report is submitted to the Department of Food Science in partial fulfillment of the requirement of the degree of Bachelor of Food Science (Food Technology), Faculty of Agrotechnology and Food Science, Universiti Malaysia Terengganu.



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DECLARATION

I hereby declare that the work in this thesis is my own except for quotations and summaries which have been duly acknowledged.

Signature : 

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ABSTRACT

The objectives of this study were to compare the chemical, physical, microstructure and sensory properties of steamed buns supplemented with sugarcane bagasse powder. In this study, sugarcane bagasse powder was used to substitute with 0%, 2%, 4%, 6% and 8% of Hong Kong flour for making sugarcane bagasse steamed buns. 100% of Hong Kong flour formulation was used as a control. The differences of composition between sugarcane bagasse powder and Hong Kong flour were studied. Proximate composition, physical quality and sensory evaluation of steamed buns containing sugarcane bagasse were analyzed and compared with those control steamed buns. Their microstructure (pore characteristics) was evaluated by Tabletop microscope. Control Chinese steamed buns contained more moisture and fat content, whereas fiber, protein and ash content were higher in sugarcane bagasse steamed buns and total carbohydrate content do not showed its trends. Sugarcane bagasse steamed buns showed lower lightness and became darker with more sugarcane bagasse powder added and showed significant differences. Hardness, colour a^* and b^* values of steamed buns significantly increased with the addition of sugarcane bagasse powder. Specific volume and colour L^* value of steamed buns decreased with the addition of sugarcane bagasse powder. Sugarcane bagasse steamed buns had lower specific volumes than the control steamed buns. Steamed buns were subjected to sensory evaluation for colour, aroma, tenderness, pore size, taste, moistness and overall acceptance. Increasing levels of sugarcane bagasse powder caused slightly decreases in total sensory scores. All the steamed buns samples except steamed buns produced from 8 % sugarcane bagasse were considered acceptable and 4% score the highest acceptance score. From the ranking preference test, panel prefer 4% sugarcane bagasse steamed buns than control and least preferred showed to 8% sugarcane bagasse steamed buns. Overall, sugarcane bagasse powder could be added into steamed buns formula and thus be developed as a health-promoting functional food.

ABSTRAK

Objektif dalam kajian ini adalah untuk membandingkan kimia, fizikal, saiz liang dan penilaian sensori untuk roti kukus cina yang telah ditambah dengan hampas tebu. Dalam kajian ini, hampas tebu telah digunakan untuk penggantian dengan 0%, 2%, 4%, 6% dan 8% dengan tepung Hong Kong untuk menghasilkan roti kukus hampas tebu. 100% tepung Hong Kong formula dijadikan sebagai roti kukus kawalan. Perbezaan komposisi antara tepung Hong Kong dengan serbuk hampas tebu telahpun dikaji. Analisis proksimat, analisis fizikal dan penilaian sensori untuk roti kukus yang mempunyai hampas tebu telahpun dikaji dan telah dibandingkan dengan roti kukus kawalan. Saiz liang untuk roti kukus telah diperhatikan dengan menggunakan Tabletop mikroskop. Roti kukus kawalan mempunyai kandungan lembapan dan lemak yang tinggi manakala gentian kasar, protein, dan kandungan abu didapati lebih tinggi di roti kukus hampas tebu dan jumlah karbohidrat tidak menunjukkan trend. Roti kukus hampas tebu menunjukkan kecerahan yang rendah dan menjadi semakin gelap warnanya apabila semakin banyak serbuk hampas tebu ditambah dan menunjukkan adanya perbezaan beerti. Kekerasan, a^* dan b^* nilai warna untuk roti kukus meningkat secara perbezaan beerti dengannya penambahan serbuk hampas tebu. Isipadu dan L^* warna nilai untuk roti kukus menurun dengannya penambahan serbuk hampas tebu. Roti kukus hampas tebu mempunyai isipadu yang lebih rendah daripada roti kukus kawalan. Roti kukus telah dinilai untuk penilaian sensori untuk atribut-atribut warna, bau, kelembutan, size liang, rasa, kelembapan dan penerimaan keseluruhan. Peningkatan kandungan serbuk hampas tebu menyebabkan sedikit penurunan dalam penerimaan keseluruhan. Semua sampel roti kukus kecuali roti kukus yang dihasilkan daripada 8% hampas tebu telah dianggap boleh diterima dan skor 4% roti kukus hampas tebu mendapat skor yang paling tinggi penerimaan. Dari ujian keutamaman, panel paling suka 4% roti kukus hampas tebu berbanding dengan roti kukus kawalan dan 8% hampas tebu menunjukkan kesukaan yang paling rendah. Secara keseluruhan, tepung hampas tebu boleh ditambah ke dalam roti kukus formula dan dengan itu akan dianggap sebagai makanan berkhasiat kesihatan.