

# DEVELOPMENT OF HIGH DENSITY POLYETHYLENE

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# DEVELOPMENT OF YAM BEAN BALL WITH FILLING

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RESEARCH PROJECT submitted in partial fulfillment of the  
requirements for the Degree of Bachelor Food Science  
(Food Service and Nutrition)

FACULTY OF AGROTECHNOLOGY AND FOOD SCIENCE  
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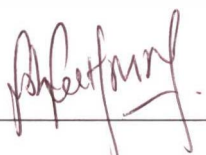
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## DECLARATION

I hereby declare that this research project is based on my original work except for quotations and citations which have been duly acknowledged.

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## ABSTRACT

In this study, yam bean flour was produced to develop yam bean ball with filling. The colour of yam bean flour was light brown. Six formulations were produced based on different percentage of yam bean flour. Formulation A is the control of this product, which contains 100 % of wheat flour. Other formulations which contain yam bean flour on different percentage included 20 %, 40 %, 60 %, 80 % and 100 %. Air-oven drying method was used to dry the yam bean slices before it has been ground into flour. Steaming was the method used to cook the product. Carrots and corn kernels which are high in carotenoids were the filling of this yam bean ball. Physical analysis which was colour analysis, firmness and springiness had been determined on this product. The results showed that the colour of yam bean ball with filling became darker when the percentage of yam bean flour used increased. Factors which affect firmness and springiness of yam bean ball were the thickness of the yam bean ball and compactness of the filling. Besides that, chemical analysis which included moisture content, ash content, protein content, fiber content, fat content and carbohydrate content was determined on this product. The moisture content of the yam bean ball with filling ranged from 52.26 % to 54.92 %. The ash content, fat content and carbohydrate content of yam bean ball with filling increased when the percentage of yam bean flour used increased. Meanwhile, the protein content and fiber content of this product decreased when the percentage of yam bean flour used increased. This product was tested on colour, aroma, firmness, springiness, stickiness, sweetness, mouth feel and overall acceptance to determine panel acceptability by using affective test. Through this sensory evaluation, the results from 50 panels showed that the highest overall acceptance of this product was Formulation E which contains 80 % of yam bean flour.



## PERKEMBANGAN BEBOLA SENKWANG YANG BERINTI

### ABSTRAK

Dalam kajian ini, tepung sengkwang telah dihasilkan untuk memperkembangkan bebola sengkwang yang berinti. Warna tepung sengkwang ialah coklat muda. Enam formulasi telah dihasilkan berdasarkan peratus tepung sengkwang yang berlainan. Formulasi A sebagai kawalan mengandungi 100 % tepung gandum. Formulasi yang lain mengandungi peratus tepung sengkwang yang berlainan termasuklah 20 %, 40 %, 60 %, 80 % dan 100 %. Cara pengeringan *air-oven* telah digunakan untuk mengeringkan hirisan sengkwang sebelum dikisar menjadi tepung. Cara mengukus telah digunakan untuk memasak produk ini. Lobak dan jagung yang mengandungi sumber karotenoid yang tinggi digunakan sebagai inti bebola sengkwang. Analisis fizikal iaitu analisis warna, kepejalan dan kekenyalan produk ini telah ditentukan. Keputusan menunjukkan bahawa warna bebola sengkwang yang berinti semakin gelap apabila peratus tepung sengkwang yang digunakan meningkat. Faktor yang mempengaruhi kepejalan dan kekenyalan bebola sengkwang ialah ketebalan bebola sengkwang dan kepadatan inti. Selain itu, kimia analisis telah dijalankan untuk produk ini untuk menentukan kandungan lembapan, kandungan abu, kandungan protein, kandungan fiber, kandungan lemak dan kandungan karbohidrat. Kandungan lembapan bebola sengkwang ini adalah dalam lingkungan 52.26 % to 54.92 %. Kandungan abu, kandungan lemak dan kandungan karbohidrat bebola sengkwang semakin meningkat apabila peratus tepung sengkwang yang digunakan semakin meningkat. Manakala kandungan protein dan kandungan fiber produk ini semakin menurun apabila peratus tepung sengkwang yang digunakan semakin meningkat. Produk ini juga dinilai dari segi warna, aroma, kepejalan, kekenyalan, kelekitan, kemanisan, *mouth feel* dan penerimaan keseluruhan dengan menggunakan ujian afektif. Melalui penilaian sensori ini, keputusan daripada 50 orang panel menunjukkan penerimaan keseluruhan tertinggi produk ini ialah Formulasi E yang mengandungi 80 % tepung sengkwang.