

DEVELOPMENT OF NOODLE USING CHICKPEA
(*Cicer arietinum* L.) FLOUR

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FACULTY OF AGROTECHNOLOGY AND FOOD SCIENCES
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By
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Department of Food Science
FACULTY OF AGROTECHNOLOGY AND FOOD SCIENCE
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FAKULTI AGROTEKNOLOGI DAN SAINS MAKANAN
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PENGAKUAN DAN PENGESAHAN LAPORAN
PROJEK PENYELIDIKAN I DAN II

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DEVELOPMENT OF NOODLE USING CHICKPEA (*Cicer arietinum* L.)
Flour

oleh ASVINI A/P VASTHAVAN, No.Matrik UK 11397

telah diperiksa dan semua pembetulan yang disarankan telah dilakukan. Laporan ini
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PROJEK PENYELIDIKAN I DAN II**

Adalah ini diakui dan disahkan bahawa laporan penyelidikan bertajuk: 'Development of Noodle Using Chickpea (*Cicer arietinum* L.) Flour' oleh Asvini A/P Vasthavan UK11397 telah diperiksa dan semua pembetulan yang disarankan telah dilakukan. Laporan ini dikemukakan kepada Jabatan Sains Makanan sebagai memenuhi sebahagian daripada keperluan memperolehi Ijazah Sarjana Muda Sains Makanan (Perkhidmatan Makanan dan Pemakanan). Fakulti Agroteknologi dan Sains Makanan, Universiti Malaysia Terengganu.

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DECLARATION

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

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ABSTRACT

Chickpea is an important source of plant protein. Due to presence of the abundant amount of essential amino acid, addition of chickpea flour into cereal-based products will provide well balanced protein to human diet. The objective of this study was to develop yellow alkaline noodle using chickpea flour. The study included determination of physicochemical properties and nutritional values as well as sensory acceptability of noodles made from chickpea flour. Chickpea noodles were formulated by substituting bread flour at levels of 10, 20, 30, 40 and 50 percent of chickpea flour. The steps involved in making these noodles include mixing, compressing, resting, sheeting, cutting, boiling, rinsing and draining as well as oiling. Physical analysis was carried out to determine colour and texture profiles. Noodle lightness (L^*) and texture attributes which were instrumentally characterized starts to diminish as the amount of chickpea flour increases. Chemical compositions of cooked noodles were determined on wet weight basis of the samples. Moisture content increases as the substitutions increase. Inclusion of chickpea flour confers higher contents of ash, crude fat, crude protein and crude fiber to the noodles. Carbohydrate content of noodles decreased when substitution levels increased. Sensory evaluation was executed using 40 panels to determine the acceptability of noodles made of chickpea flour. The results revealed that addition of chickpea flour up to 40 percent were not significantly different to noodles made with 100 percent bread flour for all sensory properties except for colour and elasticity of the product. Study implies that enrichment of noodles with 20 to 40 percent of chickpea flour could potentially produce noodles with favourable characteristics.

ABSTRAK

Kacang kuda adalah sumber penting protein tumbuhan. Disebabkan kehadiran jumlah asid amino perlu yang banyak, penambahan tepung kacang kuda ke dalam produk berasaskan bijirin akan membekalkan protein yang seimbang kepada diet manusia. Objektif kajian ini adalah untuk menghasilkan mi kuning beralkali dengan menggunakan tepung kacang kuda. Kajian ini juga melibatkan penentuan sifat-sifat fizikokimia dan nilai nutrisi serta ciri-ciri sensori bagi mi yang diperbuat daripada tepung kacang kuda. Mi kacang kuda telah diformulasikan dengan menggantikan tepung roti pada tahap 10, 20, 30, 40 dan 50 peratus. Langkah-langkah yang terlibat dalam pemprosesan mi termasuk pengaduan, pemampatan, pengrehatan, penggelekan, pemotongan, pendidihan, pembilasan dan penapisan serta penyemburan minyak. Analisis fizikal telah dijalankan untuk menentukan profil warna dan tekstur. Kecerahan (L^*) mi dan atribut tekstur yang dicirikan secara instrumental menyusut dengan pertambahan jumlah tepung kacang kuda. Komposisi kimia dalam mi ditentukan berdasarkan berat asas basah pada sampel. Kandungan kelembapan meningkat dengan pertambahan penggantian. Penambahan tepung kacang kuda menyumbang kandungan abu, lemak kasar, protein kasar, serat kasar yang tinggi dalam mi. Kandungan karbohidrat dalam mi menurun apabila tahap penggantian ditingkatkan. Penilaian sensori telah dilaksanakan dengan menggunakan 40 orang panel untuk menentukan penerimaan mi yang dihasilkan dengan tepung kacang kuda. Keputusan menggambarkan penambahan tepung kacang kuda sehingga 40 peratus tidak berbeza secara signifikan daripada mi yang diperbuat daripada 100 peratus tepung roti untuk semua ciri-ciri sensori kecuali untuk warna dan keanjalan produk. Kajian menunjukkan penambahan 20 hingga 40 peratus tepung kacang kuda mempunyai potensi untuk menghasilkan mi dengan ciri-ciri yang baik.