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Nama penyelia: Associate Professor Dr. Cheng Lai Hoong

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Sekian, terima kasih.

DR. CHENG LAI HOONG
(ASSOCIATE PROFESSOR)
FOOD TECHNOLOGY DIVISION
SCHOOL OF INDUSTRIAL TECHNOLOGY
UNIVERSITI SAINS MALAYSIA

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DEVELOPMENT OF SESAME OIL-BASED NON-DAIRY CREAMER

by

YAU XIANG MING

A dissertation submitted in partial fulfilment of the requirements for the degree of
Bachelor of Technology (B. Tech) in the field of Food Technology
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DECLARATION BY AUTHOR

This dissertation is composed of my original work and contains no material previously published or written by another person except where due reference has been made in the text. The content of my dissertation is the result of work I have carried out since the commencement of my research project and does not include a substantial part of work that has been submitted to qualify for the award of any other degree or diploma in any university or other tertiary institution.

YAU XIANG MING

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATION

Abbreviation	Caption
ANOVA	Analysis of variance
a_w	Water activity
$D_{[3,2]}$	Surface weighted mean
$D_{[4,3]}$	Volume weighted mean
DC	Dairy creamer
DE	Dextrose equivalents
F1	Creamer formulated with 10% of sodium caseinate calculated as percentage of the total oil and sodium caseinate components
F2	Creamer formulated with 20% of sodium caseinate calculated as percentage of the total oil and sodium caseinate components
F3	Creamer formulated with 30% of sodium caseinate calculated as percentage of the total oil and sodium caseinate components
HR	Hausner ratio
NaCas	Sodium caseinate
NDC	Non-dairy creamer
SEM	Scanning electron microscope
T_g	Glass transition temperature

PERKEMBANGAN KRIMER BUKAN TENUSU BERASASKAN MINYAK BIJAN

ABSTRAK

Krimer berperisa yang bersesuaian dengan citarasa masyarakat tempatan mempunyai pasaran yang besar. Sesetengah peminum kopi suka menambahkan krimer ke dalam kopi untuk memperkayakan rasa dan memutihkan warna kopi. Kajian ini bertujuan untuk menghasilkan krimer kopi dengan menggunakan minyak bijan. Kesan peratusan berat natrium kaseinat yang berlainan (10%, 20% dan 30%) yang dikira daripada jumlah komponen minyak dan natrium kaseinat dalam krimer terhadap sifat fisiko-kimia telah dikaji. Sampel yang dihasilkan telah diciri berdasarkan morfologi zarah, saiz zarah, warna, aktiviti air, kandungan kelembapan, ketumpatan pukal, kemampuan aliran, kelarutan dan kemampuan pemutihan. Hasil kajian menunjukkan bahawa peratusan berat natrium kaseinat yang berlainan yang dikira daripada jumlah komponen minyak dan natrium kaseinat dalam krimer mempunyai kesan yang signifikan terhadap sifat fisiko-kimia kecuali kandungan kelembapan. Selain itu, krimer yang diformulasikan dengan 30% natrium kaseinat yang dikira sebagai peratusan daripada jumlah kompenen minyak dan natrium kaseinat memiliki ciri-ciri yang paling diinginkan sebagai krimer antara ketiga-tiga formulasi dari segi kemampuan aliran, kelarutan dan kesan pemutihan. Keputusan juga menunjukkan kemampuan aliran krimer bertambah baik apabila 1% dan 2% silikon dioksida telah ditambahkan ke dalam formulasi. Hasil analisis mikroba menunjukkan bahawa krimer berasaskan minyak bijan yang dihasilkan selamat untuk dimakan kerana bakteria aerobik, yis, kulat dan *Escherichia coli* tidak dapat dikesan. Skor penerimaan keseluruhan untuk krimer berasaskan minyak bijan adalah 4.2 berdasarkan skala hedonik 7 mata. Ini menunjukkan bahawa krimer berasaskan minyak bijan yang dihasilkan mempunyai tahap penerimaan yang sederhana dalam kalangan ahli panel.

DEVELOPMENT OF SESAME OIL-BASED NON-DAIRY CREAMER

ABSTRACT

Flavoured creamer is trendy in the current market. Coffee drinkers like to add creamer into their coffee to diversify or enrich the flavour at the same time whiten the colour. This study aimed at developing a coffee creamer by using sesame oil. The effects of different weight percentage of sodium caseinate to the total oil and sodium caseinate components (10%, 20% and 30%) in the creamer on the physicochemical properties was studied. Samples produced were characterized by particle morphology, particle size, colour, water activity, moisture content, bulk density, flowability, solubility and whitening ability. Results showed that different weight percentage of sodium caseinate to the total oil and sodium caseinate components had significant effects on the physicochemical properties of the creamer except for the moisture content analysis. Creamer formulated with 30% of sodium caseinate calculated as percentage of the total oil and sodium caseinate possessed the most desirable properties as a creamer in term of flowability, solubility and whitening effect among the three formulations studied. Besides, it was found that flowability of the creamer produced were improved substantially when 1% and 2% of silicon dioxide was added to the formulation. The microbial analyse results of the best formulated sesame oil-based creamer showed that aerobic bacteria, yeast, mold and *Escherichia coli* were not detectable. The creamer produced was safe to be consumed. The overall acceptability score for the sesame oil-based creamer produced was 4.2 based on a 7-point hedonic scale. This indicated that the sesame flavoured creamer produced was moderately acceptable by the panellists.