



A SHORT REVIEW ON MODIFICATION AND
CHARACTERIZATION OF HEAT MOISTURE TREATED
STARCH FROM BANANA (*Musa spp.*)

by

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Sekian, terima kasih.

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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 that 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 institution.

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LIST OF ABBREVIATIONS

Abbreviation	Caption
C	Celsius
FAO	Food and Agriculture organization
FTIR	Fourier-transform infrared spectroscopy
g	gram
h	Hour
HMT	Heat moisture treatment
kg	kilogram
min	Minute
UK	United Kingdom
SEM	Scanning electron microscope
XRD	X-ray diffraction

SEBUAH ULASAN PENDEK TENTANG MODIFIKASI DAN PENGKELASAN
MENGUNAKAN KAEDAH HABA DAN KELEMBAPAN PADA KANJI
DARIPADA PISANG (*Musa spp.*) DENGAN KEMATANGAN YANG BERBEZA

Abstrak

Sisa makanan yang terhasil daripada pisang adalah ketara disebabkan jangka hayatnya yang pendek dan keadaan yang lemah seiring dengan kematangan. Masalah ini dapat dikurangkan dengan mengubah ia kepada tepung dan seterusnya dirawat dengan kaedah haba dan kelembapan untuk meningkatkan fungsinya. Dalam ulasan ini, modifikasi ke atas tepung pisang (belum dan sesudah matang) dengan menggunakan kaedah haba dan kelembapan (30% kelembapan, 100-121°C, 1-24j) dan sifat fizika-kimikal dan kanji tahan terkandung dalam tepung pisang yang diubah akan dibincangkan. Kaedah haba dan kelembapan dipercayai mampu mengubah kanji tumbuhan kerana penyusunan semula molekul kanji yang menyebabkan perubahan pada sifat kanji. Daripada ulasan ini, kanji tahan ditemui sehingga 84% selepas modifikasi haba dan kelembapan. Kaedah haba dan kelembapan juga mungurangkan daya bengkak dan ketelarutan kanji pisang. Walau bagaimanapun, XRD dan FTIR tidak menunjukkan sebarang perubahan selepas modifikasi. Kaedah haba dan kelembapan dapat meningkatkan fungsi kanji pisang kerana ia menghasilkan kanji tahan jenis 3, iaitu lebih stabil untuk pemprosesan makanan.

A SHORT REVIEW OF MODIFICATION AND CHARACTERIZATION WITH
HEAT MOISTURE TREATMENT OF STARCH FROM BANANA (*Musa spp.*) WITH
DIFFERENT DEGREE OF RIPENESS

Abstract

Food waste generated from banana is significance due to its short life span and delicate condition as it ripen. The problem can be reduced by transforming the banana into flour and further treated with heat moisture treatment (HMT) to increase its functionality. In this review, modification of banana flour (ripe and unripe) with HMT (30% moisture, 100-121°C, 1-24 h) and the physico-chemical properties and resistant starch content of modified banana flour will be discussed. HMT has been found to able modifying plant starch due to the rearrangement of starch molecule which causes changes to the properties of starch. From the review, resistant starch has been found up to 84% after HMT modification. HMT also reduce swelling power and solubility of banana starch. However, X-ray diffraction and FTIR shows no changes after HMT. HMT able to increase the functionality of banana starch as it produced resistant starch type 3, which more stable for food processing.