

PHYSICAL PROPERTIES OF UNRIPE PLAIN TAIN (*Musa paradisiaca*, sp) PEEL
FILM

By
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Research Report submitted in partial fulfillment of
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ENDORSEMENT

The project report entitled Physical Properties of Unripe Plantain (*Musa paradisiaca*, sp) Peel Film by Wong Wei Teng, Matric No. UK 17516 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, University 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.

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ABSTRACT

A lot of solid wastes produced from the disposable packaging materials which are not degradable that leads to environmental pollution. Development of biodegradable packaging material is necessary to partially or totally replace synthetic polymers. Starch can be used to develop biodegradable films. Biodegradable films were successfully prepared from unripe plaintain (*Musa paradisiaca* cv. "Nangka" (AAB)) peel flour at 4%, 6%, 8%, 10%, 12% and 14% w/w of its starch concentration incorporated with 50 w/w of glycerol and 1% w/w of pectin with casting method. The films produced were characterized their physical properties in terms of thickness, colour, transparency, water vapour permeability, mechanical properties and biodegradability. Increased in starch concentration resulted in increased of thickness, yellowness, water vapour permeability (WVP) and tensile strength (TS) of the films. In contrast, elongation at break (EAB) and transparency of the films were decreased with increased of the starch concentration. Therefore, a good unripe plaintain peel film was produced at lower starch concentration because its WVP was lowest and highest in EAB.

ABSTRAK

Banyak sisa pepejal dihasilkan daripada bahan pembungkusan buangan yang mana tidak dapat berurai yang akan membawa kepada pencemaran alam sekitar. Pembangunan bahan pembungkusan yang berurai adalah perlu untuk menggantikan sebahagian atau keseluruhan polimer-polimer sintetik. Kanji boleh digunakan untuk membuat filem yang berurai. Filem yang berurai berjaya dihasilkan daripada tepung kulit pisang yang mentah (*Musa paradisiacal* cv. "Nangka" (AAB)) dengan 4%, 6%, 8%, 10%, 12% dan 14% w/w kepekatan kanji yang dicampur dengan 50 w/w glycerol dan 1% w/w pectin dengan menggunakan cara acuan. Filem-filem yang dihasilkan digunakan untuk menentukan sifat-sifat fizikal dari segi ketebalan, warna, kelutsinaran, keresapan wap air, sifat-sifat mekanikal dan sifat peruraian. Kenaikan kepekatan kanji menaikkan ketebalan, kekuningan, keresapan wap air dan kekuatan tegangan filem. Di sebaliknya, keretakan pemanjangan dan kelutsinaran filem meningkat dengan peningkatan kepekatan kanji. Oleh demikian, filem dari kulit pisang yang mentah yang bagus adalah dihasilkan pada kepekatan kanji yang rendah kerana keresapan wap air adalah terendah dan tertinggi dalam keretakan pemanjangan.