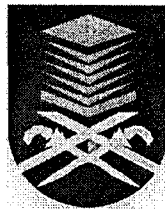


**MONITORING PORK-FREE FOOD PRODUCTS  
BY POLYMERASE CHAIN REACTION (PCR) ASSAY**



**INSTITUT PENYELIDIKAN, PEMBANGUNAN DAN PENGKOMERSILAN  
UNIVERSITI TEKNOLOGI MARA  
40450 SHAH ALAM, SELANGOR  
MALAYSIA**

**DISEDIAKAN OLEH:**

**MAIMUNAH MUSTAKIM (KETUA)  
PROF MADYA DR ZAINON MOHD NOOR  
SITI NAZRINA CAMALXAMAN**

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Prof. Dr Azni Zain Ahmed  
Penolong Naib Canselor (Penyelidikan)  
Institut Penyelidikan, Pembangunan dan Pengkomersilan (IRDC)  
UiTM, Shah Alam  
SELANGOR

Y. Bhg Prof,

**LAPORAN AKHIR PENYELIDIKAN 'MONITORING PORK-FREE FOOD PRODUCTS BY POLYMERASE CHAIN REACTION ASSAY'.**

Merujuk kepada perkara di atas, bersama-sama ini disertakan 3 (tiga) naskah laporan akhir penyelidikan bertajuk 'Monitoring Pork-Free Food Products By Polymerase Chain Reaction Assay' oleh kumpulan penyelidik dari Fakulti Sains Kesihatan dan Fakulti Sains Gunaan untuk makluman pihak Prof.

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## ABSTRACT

Processed foods with Halal label (issued by Islamic Development of Malaysia, JAKIM) were selected randomly to be tested for pork-free authentication. As a reference subject, pork-derived processed foods and several types of raw meats were also tested. The investigation was performed by using PCR-RFLP technique, which detected polymorphisms of the conserved region in the mitochondrial cytochrome *b* (cyt *b*) gene segment. PCR-amplified 359 bp of cyt *b* gene using universal primers, CYTb1 and CYTb2 from the food samples was further resolved by eight different types of restriction enzymes, *AluI*, *HindIII*, *BsaJI*, *RsaI*, *BstNI*, *MseI*, *NsiI* and *BstUI*. Application of the PCR-RFLP techniques showed distinct DNA fragments in the individual food samples. However, only certain enzymes showed discrimination amongst the tested food samples.

## CHAPTER 1

### INTRODUCTION

Islam always emphasized on the consumption of good food for healthy life. This is established with the Halal dietary laws derived from the Quran to provide guidance to Muslims in their daily practices. Apparently, Halal food is very significant to health and total wellness. When the concept of Halal food products is concerned, it must be originated from halal animals with proper slaughtering according to the Islamic law. Prohibited animals (non-Halal) especially a pig including its raw meats and other pig-derive-stuffs must always be segregated from the permitted (Halal) products. The segregation is also involved the equipment used for non-halal products where it has to be thoroughly cleansed based on the syari'at.

In practical, the Halal certification authorities such as JAIS and JAKIM make a regular inspection to food premises and slaughtering houses locally and abroad. Although Halal foods are certified by proper inspection and investigation at the manufacturer based premises, it is still necessary to monitor food products that carry Halal certification. It is well known that the Halal-label food products are more profitable, thus, monitoring to detect that the products are not adulterated intentionally or accidentally with non-Halal meat during processing is crucial.

The global demand for Halal food has increased tremendously in recent years. In 2002, the government has taken a positive effort through Ministry of Agriculture and FAMA to frame a master plan for industrialization of Halal foods for local and international consumers. The launching of MS1500: 2004 (Malaysia Standard for Halal Food) in August 2004 by the Prime Minister during MIHAS (Pameran Antarabangsa