UNIVERSITI TEKNOLOGI MARA

REPRODUCIBILITY COMPARATIVE RESEARCH OF DNA EXTRACTION METHOD PERFORMANCE TOWARDS ANIMAL BASED PHARMACEUTICAL AND FOOD PRODUCTS.

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ABSTRACT

The purpose of this study were to design an optimized DNA extraction method which can produce optimum DNA yield and purity, to design optimized PCR protocol to ensure optimum amplification of porcine target DNA and to link the optimized DNA extraction and PCR method in order to develop a porcine DNA detection system that can be commercialized. This study was began with In house DNA extraction, and was followed by another two commercialize genomic DNA extraction method which were the DNAzol method and the Wizard® Genomic DNA Purification Kit. Subsequent to extraction, DNA quantification was done to check the DNA recovery as well as its purity by spectrophotometry analysis. Besides, running nucleic acid gel electrophoresis also was done to look for the size of the extracted genomic DNA. Next, the efficiency of the optimized In house extraction method was confirmed with polymerase chain reaction (PCR) assay. The sensitivity and specificity of the PCR is important in amplifying the appropriate DNA. Again, nucleic acid gel electrophoresis was run as the final step of corroborating the size of amplified DNA as well as to verify the efficiency of the In house extraction method that has been optimized. This study may help in the halal and haram authentication of food and other products. In conclusion, the In house extraction method that has been optimized is suitable for the detection of porcine DNA traces in various products, particularly in food and health consumer product. The efficiency of the In house extraction method is proven by the successive PCR assay.

CHAPTER 1

INTRODUCTION

1.1 Introduction

Muslim consumers are nowadays educated; where the sensitivity to the halal status of products they consumed is becoming more intense. The identification of species in food is becoming very important issue concerning the assessment of food composition. This will definitely give accurate information to products the consumer purchased.

Malaysian manufacturers are cashing in on the concept that virtually all goods and services can be certified halal, not only food products, but also includes cosmetics, clothing, pharmaceuticals, financial services and even tour packages. Jumaatun Azmi (committee of Kasehdia) said that there is a certain change in consciousness, in which Muslims and non-Muslims are aware of this huge Muslim market which has been overlooked before. This is rather sensitive when it comes to foods or products they are using which are related to the incorporation of porcine derivatives as Islam prohibits them from consuming or applying any part of *Sus scrofa* (Ahmad, 1991). The obstacles of the above mentioned issue is diluted with extensive scientific study in 1997, Bjorn *et al.* who has found complete mitochondrial DNA sequence of *Sus scrofa* and DNA