UNIVERSITI TEKNOLOGI MARA

DEVELOPMENT OF A PCR BASED METHOD TO DETECT POLYMORHISM OF *ADIPOQ*

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ABSTRACT

Adipnectin is an adipose tissue- specific protein which exists in the circulation of healthy individual. It is encoded by *ADIPOQ* gene which is located on chromosome 3q27 and plays important role in regulating the insulin sensitivity of individual. Polymorphism of this *ADIPOQ* means that there is variation in the nucleotide sequence of *ADIPOQ* gene due to substitution variation. This polymorphism leads to reduction in insulin sensitivity in regulating the blood glucose level in the individual. This causes the inability of the cells to convert excess glucose to another form and lead to chronic disease which is Type 2 Diabetes. The aim of this study is to develop a PCR based method to detect the polymorphism of *ADIPOQ* gene. Primers were designed according to the gene and followed by reconstitution of primers working stock. Besides that, different DNA samples were used in order to detect the polymorphism by using PCR method. Based on the results of this study, it can be concluded that Malaysian population might carry the heterozygous genotype which means they carried the mutant allele for Type 2 Diabetes. It is suggested that for future studies, larger sample sizeare used in order to verify the preliminary finding of this project.

CHAPTER 1

INTRODUCTION

1.0 Background

Diabetes is described as a disease in which a person has high blood glucose level. This high glucose level is due to the body not able to produce enough insulin or cells of the body do not response to insulin. Type 2 diabetes is a complex, chronic metabolic illness characterized by insulin resistance and decrease pancreatic β- cell function which then lead to poor glycaemic control (Brown et al., 2007). Majority of people with type 2 diabetes are obese and this obesity will lead to insulin resistance (Alberti & Zimmet, 1998).

Type 2 diabetes is the commonest form of diabetes which contributes to 90% of diabetes population. The prevalence of type 2 diabetes is increasing quickly and become a global concern. Within Asia-Pacific region, the epidemiological data from this area are scarce. Nevertheless, data form a decade ago indicates a diabetes prevalence range of 1.4 % to nearly 12% (Cockram et al., 2000).

Type 2 diabetes are results from an interaction of genetic factor and the environmental factor (Kahn, 2003). Adiponectin appears to be major modulator of