

UNIVERSITI TEKNOLOGI MARA (UiTM)

**OPTIMIZATION OF PCR METHOD FOR
DETECTION OF SINGLE NUCLEOTIDE
POLYMORPHISM OF *IFIH1* GENE**

SUHAILA BINTI ABDUL RAHIM

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ABSTRACT

IFIH1 is one of the Non-HLA gene that involved in the coding of the immune system. Though not directly involved as the cause of the disease, it was involved in the destruction of the beta-cell of the pancreas due to the altered immune cell system. The method used to detect the allele of interest which was rs3741537 in the *IFIH1* gene was executed through the Nested PCR method. This study altogether had mainly focusing on the optimization of the Nested PCR method itself in which different parameters which includes concentration of DNA template, annealing temperature, number of cycle and the volume of primers were altered and experimented with. Upon completion of the Nested PCR, the band formation of the gene was evaluated by the gel electrophoresis. In conclusion, the study in developing the optimization of Nested PCR was successful in which the wild type allele and the mutant type allele was able to be differentiated. Thus, from this study, it can be seen that Nested PCR was a method that can be applied for Malaysian in detecting the possible chances of having the type 1 Diabetes and at the same time also being able to be the possible target for type 1 Diabetes treatment.

CHAPTER 1

INTRODUCTION

1.0 Background of study

Diabetes has been a worldwide phenomenon since it actually affects the life of almost all population in the world. Diabetes Mellitus or simply diabetes is a disease in which the body sustained a significantly high level of glucose in the body resulting symptoms such as hungry, polyuria or frequent urination, weight loss, and others. It is also known to have led to other severe disease such as cardiovascular disease. The most common treatment for diabetes patient would be the change of lifestyle such as changing of diet, exercising, and others. The treatment of diabetes centered on the usage of insulin mechanism as the medication, trying to mimic the action of normal individual insulin. Diabetes can be caused by various mechanism or factors such as autoimmune attack on the body, resistance towards insulin and other chemicals and hormonal control. There are basically two major type of diabetes which are type 1 diabetes and type 2 diabetes.