UNIVERSITI TEKNOLOGI MARA

DEVELOPMENT OF A PCR BASED METHOD FOR DETECTION OF POLYMORPHISM OF MONOAMINE OXIDASE A GENE

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ABSTRACT

Monoamine oxidase A (MAOA) enzymatically degrades the biogenic amine neurotransmitters norephinephrine, dopamine, and serotonin that plays critical role in regulation of their transmission. The MAOA gene has been associated with several behavioral disorders such as antisocial, aggressive impulse disorder and many more. When there are polymorphisms at the gene site, this may lead to drug toxicity and drug abuse. In order to identify the polymorphism of the gene, we can use the Polymerase Chain Reaction (PCR) and Gel Electrophoresis (GE). The aim of this study is to design the DNA primers to detect the MAOA allele and also to develop optimized PCR based method for detection polymorphism of MAOA. This study aims to design the specific primers and optimized the PCR method detection of polymorphism of MAOA gene. Based on the result, the DNA sample have low chances of polymorphism in MAOA gene that can lead to several behavioral disorders.

CHAPTER 1

INTRODUCTION

1.1 Background of Study

Human body consists of thousands of genes, which are the basic unit of heredity in a living organism that are located unevenly across the chromosomes. All living things depend on genes to hold the information, to build and maintain their cells and pass genetic traits to offspring. In general terms, a gene is a segment of nucleic acid that, taken as a whole, specifies a trait. The informal usage of the term *gene* often refers to the scientific concept of an allele. Allele is one member of a pair or series of different forms of a gene.

The concept of a gene has evolved with the science of genetics, which begins when Gregor Mendel noticed that biological variations are inherited from parents'