UNIVERSITI TEKNOLOGI MARA

DEVELOPMENT OF A PCR METHOD FOR DETECTION OF THROMBOXANE SYNTHASE GENE

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ABSTRACT

Thromboxane synthase gene (TBXAS1), converts prostaglandin H_2 into thromboxane A_2, a potent vasoconstrictor and inducer of platelet aggregation. Thromboxane A_2 has been implicated in modulating cell cytotoxicity tumor growth and metastasis. The aim of this study is to develop and validate a simple PCR based method to detect the allelic variance of thromboxane synthase gene. The primers were designed according to the gene sequence. Polymerase Chain Reaction using first and second set of primers was done to amplify the sequence of TBXAS1. Besides, DNA collection methods arise from blood samples and buccal samples also successfully done in detection of wild-type and mutated alleles respectively by using common reverse primer plus wild-type forward primer and mutant forward primer. Based on the result of this study, it can be concluded that the amplification process is successful based on the correct band size obtained. From the PCR product, there were some bands that shows heterozygous and homozygous for allelic variance in TBXAS1 gene. For further confirmation, the PCR product that was obtained in this study would be sent for sequencing and compared with published sequences.

CHAPTER 1

INTRODUCTION

1.1 Introduction

Aspirin or acetylsalicylic acid is one of the most effective antiplatelet agents. It effectively reduces the risk of thrombotic events across wide spectrum of patients with cardiovascular diseases (Kour *et al.*, 2006). However, most patients receiving long-term aspirin therapy still remain at substantial risk of thrombotic events due to insufficient inhibition of platelets, specifically via the thromboxane A_2 pathway (Patrono, 1994).

Aspirin resistance is the inability of aspirin to reduce production of thromboxane A_2 by platelet and thereby platelet activation and aggregation in the laboratory or clinically as its inability to prevent cardiovascular events (Weber *et al.,* 1999). The problem is important as it potentially implies the need for repeated laboratory tests and the replacement of aspirin by other antiplatelet drugs in millions of patients. Unfortunately, many of the tests employed to define aspirin resistance lack sufficient sensitivity, specificity and reproducibility. The prevalence of aspirin resistance as defined by each test varies widely and furthermore, the value of a single point