

UNIVERSITI TEKNOLOGI MARA

**DETECTION OF BLOOD ANTIOXIDANT LEVEL
FOLLOWING TREATMENT WITH ALPHA-
TOCOPHEROL AND DELTA-TOCOTRIENOL IN
NICOTINE-INJECTED MICE**

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ABSTRACT

Vitamin E which consist of tocopherol (TOC) and tocotrienol (TCT) exhibit antioxidative effect that can react with free radicals to prevent oxidative damage. The aim of this this study is to investigate the effect of two different forms of vitamin E which is alpha-tocopherol (α -TOC) and delta-tocotrenol (δ -TCT) on the level of superoxide dismutase (SOD) which is an endogenous antioxidant in nicotine-injected mice. In this study, the SOD activity in the blood of the mice were measured by using SOD assay kit after 7 days of treatment. The results showed that the group of mice that were treated with α -TOC and δ -TCT have significantly higher SOD activity as compared to the control groups. These may indicate that one of the possible mechanism of antioxidant property of vitamin E is by increasing the level of SOD in the body to reduce oxidative stress.

CHAPTER ONE

INTRODUCTION

1.1 BACKGROUND OF STUDY

Vitamin E is a fat soluble vitamin that can be found in a variety of natural sources such as wheat, barley, coconut, oat, palm, annatto seed, maize and pumpkin (Kannappan, Gupta, Kim, & Aggarwal, 2012). Nowadays, vitamin E is also available as dietary supplement. Vitamin E consists of two substances which are tocopherol (TOC) and tocotrienol (TCT). Both are structurally similar in that they have the same chromanol ring and a side chain at the C-2 position. TOCs are the saturated form of vitamin E which have phytyl side chain whereas TCTs are unsaturated which has isoprenoid side chain (Kannappan et al., 2012). Both TOC and TCT are present in 8 distinct homologs which are alpha (α), beta (β), gamma (γ) and delta (δ)-tocopherols and α , β , γ and δ -tocotrienols depending on the position and number of methyl substitutions on the chromanol ring (Kannappan et al., 2012).

1.2 BENEFITS OF VITAMIN E

All homologs of vitamin E have antioxidative effect and can act as protective agents against cellular damages. α -TOC which is the most abundant form is the strongest antioxidant. Besides, α -TOC is also believed to lower the incidence of prostate cancer in man and reduce the mortality rate in male smokers (Yang, Suh, & Kong, 2013). In other studies, intake of α -