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EFFECT OF ASTAXANTHIN ON SHORT TERM MEMORY AND LEVELS OF SUPEROXIDE DISMUTASE AND MITOCHONDRIAL COMPLEX II IN SCOPOLAMINE INDUCED MICE

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ABSTRACT

EFFECT OF ASTAXANTHIN ON SHORT TERM MEMORY AND LEVELS OF SUPEROXIDE DISMUTASE AND MITOCHONDRIAL COMPLEX II IN SCOPOLAMINE INDUCED MICE

The study was performed to evaluate the effect of astaxanthin (ATX) in improving short term memory and levels of superoxide dismutase (SOD) and mitochondrial complex II in scopolamine induced mice. Twenty-five (25) mice were divided into five groups; control, scopolamine (Scp) induced group and ATX treated groups (12.5, 25 and 50mg/kg of ATX). The control group was given normal saline 0.9% i/p while the Scp group and treatment groups were injected with 3mg/kg scopolamine i/p. Only after 7 days, the treatment was given. Morris Water Maze test was done after 21 days of Scp injection. The protein sample from the brain was collected and assayed for SOD and complex II activity. The effect of ATX in the behavioral test was not shown significantly except for day 2 which there is a significant difference in distance travelled by mice in scopolamine induced group and the second dose (25mg/kg) group. Nevertheless, there is no statistically significance difference shown based on the levels of SOD and complex II (NS, $P>0.05$).

CHAPTER 1

INTRODUCTION

1.1 Background of study

Alzheimer's disease (AD) is characterized by the progressive loss of memory and cognitive function (Pike & Shankle, 1996). These impairments have been attributed to the development of β-amyloid plaques and neurofibrillary tangles (NFT) of tau proteins (Silvestrelli, Lanari, Parnetti, Tomassoni, & Amenta, 2006). This disease is also the most common cause of dementia (Blennow, de Leon, & Zetterberg, 2006). AD was discovered by Dr. Alois Alzheimer when he noticed peculiar changes in the brain tissues of a female patient, Auguste Deter, who died of an unusual form of mental illness (Maurer, Volk, & Gerbaldo, 1997). What Dr Alzheimer found were dramatic shrinkage and abnormal clumps in and around the nerve cells of Mrs Deter's brain at autopsy (Maurer et al., 1997). AD is named after him by Emil Kraepelin, a German psychiatrist who worked with him (Information, 1906).

The symptoms of AD are many. However, most of the patients will experience forgetfulness (Jack et al., 2011), hallucinations, depressions, agitation, insomnia (Burke, Maramaldi, Cadet, & Kukull, 2016). In fact, AD patients cannot imitate gestures and are unable to use tools (Johnen et al., 2016).