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ANTI STRESS-DEPRESSION EFFECTS OF ACACIA HONEY ON CHRONIC UNPREDICTABLE MILD STRESS RATS

QAMARUL HAFIZ BIN ZAINOL ABIDIN

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ABSTRACT

Stress can cause adverse health effects such as depression and metabolic disorder. Meanwhile, Acacia honey is a commonly consume traditional medicine that have been reported to alleviate stress-disorder. Thus, anti stress-depression effects of Acacia honey was investigated. Honey quality and antioxidant is an important criterion for honey and therefore were conducted following International Honey Commission guidelines. Acacia honey and Tualang honey (used as honey comparison in preliminary study) were measured to be in good quality and have good amount of phenolic and flavonoid equivalent at 111.23 mg GAE/kg, 14.16 mg CE/kg and 123.33 mg GAE/kg, 29.74 mg CE/kg respectively. Both honeys also show strong antioxidant activities with rate of 10% erythrocyte haemolysis values at 80.39 Δt and 129.48 Δt respectively. Chronic Unpredictable Mild Stress (CUMS) rats model was used for stress. CUMS protocol was tested for compatibility in preliminary study. Preliminary study's CUMS induced stress-disorder effects such as retarded weight gained ($p < 0.05$) and increase glucocorticoids level ($p < 0.01$) in both stressed rats and stressed rats supplement with Tualang honey (1.2 g/kg). These effects were not observed in stressed rats supplement with Acacia honey (1.2 g/kg). Modified CUMS used in final test induced stress-depression symptoms such as anhedonia ($p < 0.05$), increase anxiety behaviour ($p < 0.05$), retarded weight gained ($p < 0.05$) and abnormal expression of stress-related hormone ($p < 0.05$) in stressed rats but not in stressed rats supplement with Acacia honey or amitriptyline drug (0.01 g/kg). This shows Acacia honey supplement can attenuate stress-depression effects.

ACKNOWLEDGMENT

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CHAPTER ONE

INTRODUCTION

1.1. RESEARCH BACKGROUND

Stress is a common aspect of modern life. It can cause profound physiological and behavioral disturbances if left untreated. Stress also a major contributing factor in psychosomatic disorder:- illness and disease that resulted from aggravated psychological disorder, namely emotional stress (Henderson & Johnston, 2004). This is because, during stress disorder, brain regions responsible for various biological systems become dysregulate and subsequently affecting body overall health (Sarafino, 2008). Stress-disorder has already been identified as important risk factors that can give rise to many morbid diseases such as hypertension, cardiovascular disease, obesity, diabetes and cancer (Aschbacher et al., 2014; Popovic et al., 2014; Spiegel & Giese-Davis, 2003). One of the major co-occurrence diseases with stress is depression (Maes, 2011; Sarafino, 2008). Stress-depression disorder is define as adverse effects occur due to stress-disorder which can lead to depressive symptoms (Sapolsky et al., 2000; Sarafino, 2008).

A survey done by Institute for Public Health in 2011 showed that almost 5% of Malaysian having mental illness and a third of it caused by stress-depression disorder. Main causes for stress-depression among Malaysian is identified to be from anxiety, which can be originated from problems at work, family problems and presence of chronic disease (Kader Maideen et al, 2014; Khodarahimi et al., 2012). The direct effect of stress-depression disorder is the loss of productivity among working adults (Khodarahimi et al., 2012). Other effects from stress-depression can also include social withdrawal, suicide tendency and susceptibility to chronic disease (Reiche et al., 2004).

Recent studies showed that honey can alleviate stress-disorder effects. Studies on Nigerian's Idanre honey show mice treated with the honey exhibit increase exploratory behavior in anxiety test apart from inducing antinociceptive effect during tail-flick test (Akanmu et al., 2011). Similarly, studies on Malaysian's Tualang honey shown Tualang honey have the capabilities to normalized cortisol levels in jumping