

Influence of Acute and Chronic Consumption of Tualang Honey on Oxidative Stress  
in Female Athletes

Ahmad, N.S. (Ph.D)<sup>1,3\*</sup>, Aziz, A.A. (Ph.D)<sup>2</sup>, Kong, K.W. (Ph.D)<sup>2</sup>, Hamid, M.S.A. (Ph.D)<sup>2</sup>,  
Cheong, J.P.G. (Ph.D)<sup>1</sup>, Hamzah, S.H. (Ph.D)<sup>1</sup>

<sup>1</sup>Sports Centre, University of Malaya, 50603 Kuala Lumpur, Malaysia

<sup>2</sup>Faculty of Medicine, University of Malaya, 50603 Kuala Lumpur, Malaysia

<sup>3</sup>School of Health Science, Universiti Sains Malaysia, 15200 Kelantan, Malaysia

\*Corresponding author: Nur Syamsina Ahmad, E-mail: nursyamsina@usm.my

Abstract

**Introduction:** Tualang honey (TH) contains the highest free radical scavenging and antioxidant activity in Malaysia which may have protective effect against oxidative stress. Since athletes developed oxidative stress during intense physical activity and injury, therefore, the aim of this study was to investigate the effects of TH on oxidative stress and whether it is influenced by acute and chronic TH consumption in female athletes.

**Methods:** Twenty female athletes [aged  $20.3 \pm 2.4$  years; body weight (BW)  $53.2 \pm 4.9$  kg] were randomly assigned into acute and chronic studies and consumed 0.75g/kg BW of TH. In acute study, participants (n=10) ingested a single dose of TH to observe its effects at 2-hour. For chronic study, participants (n=10) ingested TH daily for 8 weeks. Blood samples were collected at fasting and at 2-hour after TH consumption in acute study, and at 0- and 8-week in chronic study. Blood plasma was analysed for oxidative stress biomarkers [malondialdehyde (MDA) and reactive oxygen species (ROS)]. Paired and Independent t-test is used in the statistical analysis.

**Results:** In the acute study, MDA level was significantly reduced by  $5.4 \pm 5.9\%$  from baseline to 2-hour but not ROS level. In the chronic study, both MDA and ROS were significantly reduced by  $13.7 \pm 10.2\%$  and  $28.3 \pm 19.1\%$  respectively. The chronic group showed a significantly greater reduction in MDA and ROS than the acute group.

**Conclusions:** The extent by which Tualang honey reduces oxidative stress in female athletes is influenced by its acute and chronic consumption.

**Keywords:** Athletes, Antioxidants, Malondialdehyde, Dosage, ROS