LIPID PEROXIDATION IN SELECTED TISSUES OF RATS TREATED WITH HONEY AND NICOTINE

Nooraain Hashim¹, Harita Hashim¹, Nur Syamimi Mohd Azahan¹, Sharifah Aliana Syd Azhar¹, Noorafiza Rozali² and Noor Hashida Hashim³

¹Faculty of Applied Sciences, Universiti Teknologi MARA, 40450 Shah Alam, Selangor
²Institute of Graduates Studies,
³Centre For Foundation Studies in Science, University of Malaya 50603, Kuala Lumpur

Nicotine and honey are believed to be having contradictory effects on mammalian tissues. Tissue peroxidation is one of the negative effects of nicotine, while honey was proven to possess antioxidant activity. Therefore, the two objectives of the study were; 1. To determine the levels of lipid peroxidation on selected tissues of rats, 2. To evaluate whether honey could redeem the deleterious effect of nicotine on the treated tissues. The experiments were designed to measure the reactive substance malondialdehyde (MDA), which is the indicator of oxidative stress in cells using TBARS assay kit. A group consisting of 6 Sprague Dawley rats were intramuscularly injected with 0.5mg/100g nicotine while another group was forced fed with 1.0 ml/100 g body weight honey. The third group received both nicotine and honey of the same concentrations. Meanwhile, two control groups each received 0.9% saline either through injection or forced feeding. The treatments lasted for 60 days. The tissues under study included skin, pancreas, smooth muscle and skeletal muscle showed the lowest content of MDA when treated with honey but highest for the nicotine treated group. Skin had the lowest value with 0.65±0.65 μM followed by skeletal muscle with 0.98±0.00 μM, smooth muscle 2.28±0.86 μM and pancreas 13.02±2.61 μM. The MDA levels among nicotine treated tissues were significantly higher especially the pancreas with 41.67±10.42 μM (p<0.05). Meanwhile, the tissues treated with both honey and nicotine showed comparable results with those of the controls and the honey treated groups. The findings proved that honey could either masked or reduced the peroxidation effect of nicotine on mammalian tissue and reduced the level of reactive oxygen content. This could spark some insights into further research by using samples of tissues among smokers.

Keywords: nicotine, honey, malondialdehyde, oxidative stress,