ABSTRACT

The Effect of Red-Fleshed Dragon Fruit (*Hylocereus polyrhizus*) Extract on the Concentration of Malondialdehyde and the Histopathology of Respiratory Tract due to Cigarette Smoke Exposure on Male Rats

Cigarette smoking has been proven to cause a variety of problems in the respiratory tract because it has highly reactive free radicals that trigger oxidative stress. The main objective of this study was to investigate the capacity of red-fleshed dragon fruit extract to prevent oxidative stress caused by cigarette smoking. This study was a laboratory experiment with post-test only control group design. This study was performed using 25 rats strain Wistar, 3-4 months old, weighing 150-250 grams, which were randomly divided into 5 groups. Blood plasma samples were collected. The concentration of malondialdehyde in the blood plasma was measured using thiobartituric acid reactive substance (TBARS) in spectrophotometric method. The histopathology of trachea and lung tissues was observed under the light microscope. The data were analyzed by ANOVA Post-Hoc LSD test. The results showed there were significant differences between groups regarding the concentration of malondialdehyde (p=0.033), the length of cilia of epithelial trachea cells (p=0.000), the number of Goblet cells in trachea tissue (p=0.000), and the degree of inflammation of the lung tissue (p=0.004). The conclusion is that cigarette smoking can contribute to oxidative stress by increasing malondialdehyde concentration in blood, shortening the cilia of epithelial trachea cells, increasing the number of Goblet trachea cells, and increasing the level of lung tissue inflammation.

Keywords: *Hylocereus polyrhizus*, malondialdehyde, cigarette smoking