

**ABSTRACT**

Cigarette smoke is harmful for active and passive smoker's health. It can cause hormone secretion disorders, impotence and female reproductive disorders. Cigarette smoke exposure affects the decrease in estrogen levels. The decline of estrogen in active and passive smokers occurs due to oxidative stress caused by free radicals. Vitamin C is an antioxidant that can protect the body from the oxidative stress. The objective of this study was to determine the effect of vitamin C supplementation on blood levels of the hormone estrogen in female mice exposed by cigarette smoke.

This study was an experimental research laboratory using randomized posttest only control group design. The sample size in this study were 10 female mice for each group, divided into the treatment group and the control group. Both of groups were exposed by one cigarette smoke per day for 20 days. The exposure began in the estrus phase. Within 10-15 minutes after exposure, the treatment group were given supplemental vitamin C at a dose of 0.13 mg/g body weight/day while the control group given vitamin solvent (aquadest) as a placebo. At the last day of the treatment, the mice were sacrificed and the blood serum was taken to examine the estrogen hormone levels.

The results showed that there was a significant difference of the estrogen hormone levels ( $p = 0.00$ ) between the treatment group ( $26.39 \pm 1.23$  pg/ml) and the control group ( $23.76 \pm 0.60$  pg/ml).

The conclusion of this study was there is an influence of vitamin C supplementation on blood levels of the estrogen hormone in female mice exposed by cigarette smoke. Vitamin C may increase estrogen levels, but cannot reach the normal levels of estrogen on female mice exposed by cigarette smoke.

**Keywords:** vitamin C, estrogen hormone, cigarette smoke