Cigarette smoking (CS) causes a variety of adverse effects on organs that have no direct contact with the smoke itself, such as the liver (1,2). The purpose of this study is to define the protective role of alpha lipoic acid (ALA) on histopathological changes in liver tissues caused by cigarette intoxication.

Twenty eight female Sprague Dawley rats were randomly divided into three groups: Control group (n=8), CS group (n=10; 12 cigarettes/day, 8 weeks), and CS+ALA group (n=10; 12 cigarettes/day+100mg/kg, 8 weeks). At the end of the study period, liver tissues were taken from all animals for the histopathological and immunohistochemical examinations.

In the light microscopic evaluation of Masson’s trichrome stain, the control group showed normal histological structure of liver tissues. Medium levels of dilatation and hemorrhagic patches were found in liver sinusoids and vessels in CS group. High levels of necrotic patches, dilatation in sinusoids and vessels were found in CS+ALA group. Moreover, an extensive fibroblast growth and increase of collagen fiber, namely fibrosis, were observed in the same group. Also, the macroscopic and microscopic examinations determined neoplastic growth and tumorigenesis in liver in CS+ALA group. Immunohistochemical analyses support our histopathological findings. TNF-α via immunostaining had a negative result in the control group. A big number of necrotic cells were observed in CS+ALA group. TNF-α immunopositive cells in CS group were found at medium level (+2), in CS+ALA group at extensive level (+3).

In conclusion, it was observed that cigarette smoking caused sporadic structural changes in liver tissues. The administered of ALA (100mg/kg) has no protective effect against cigarette intoxication on liver tissue. Future studies which will applied different doses of ALA can bring clarity to this issue.

Key words: Cigarette smoking, liver, alpha lipoic acid

References