

The Effects of Ellagic Acid on Rat Liver Induced Tobacco Smoke

Authors : Nalan Kaya, Elif Erdem, Mehmet Ali Kisacam, Gonca Ozan, Enver Ozan

Abstract : Tobacco smokers continuously inhale thousands of carcinogens and free radicals. It is estimated that about 1017 oxidant molecules are present in each puff of tobacco smoke. It is known that smoking has adverse effects on the structure and functions of the liver. Ellagic acid (EA) has antioxidant, antiapoptotic, anticarcinogenic, antibacterial and antiinflammatory effects. The aim of our study was to investigate the possible protective effect of ellagic acid against tobacco smoke-mediated oxidative stress in the rat liver. Twenty-four male adult (8 weeks old) Sprague-Dawley rats were divided randomly into 4 equal groups: group I (control), group II (tobacco smoke), group III (tobacco smoke + corn oil) and group IV (tobacco smoke + ellagic acid). The rats in group II, III and IV, were exposed to tobacco smoke 1 hour twice a day for 12 weeks. In addition to tobacco smoke exposure, 12 mg/kg ellagic acid (dissolved in corn oil), was applied to the rats in group IV by oral gavage. An equal amount of corn oil used in solving ellagic acid was applied to the rats by oral gavage in group III. At the end of the experimental period, rats were decapitated, and liver tissues were removed. Histological and biochemical analyzes were performed. Sinusoidal dilatation, inflammatory cell infiltration in portal area, increased Kuppfer cells were examined in tobacco smoke group and tobacco smoke+ corn oil groups. The results, observed in tobacco smoke and tobacco smoke+corn oil groups, were found significantly decreased in tobacco smoke+EA group. Group-II and group-III MDA levels were significantly higher, and GSH activities were not different than group-I. Compared to group-II, group-IV MDA level was decreased, and GSH activities was increased significantly. The results indicate that ellagic acid could protect the liver tissue from the tobacco smoke harmful effects.

Keywords : ellagic acid, liver, rat, tobacco smoke

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