Radiation-Induced Lung Injury has 2 components: radiation pneumonitis and radiation fibrosis. The pulmonary fibrosis has no known efficient treatment. The purpose of this study was to study the relationship between the oxidant/antioxidant status and pulmonary fibrosis in rats having radiation induced pulmonary fibrosis and to study the antioxidant effects of pentoxifylline, vitamin E, and vitamin C in the treatment of pulmonary fibrosis.

Material/Methods: The study rats were divided into 5 groups: Thoracic RT + vitamin E + Pentoxifylline for group 1, Thoracic RT + vitamin C + Pentoxifylline for group 2, Thoracic RT + vitamin C + vitamin E + Pentoxifylline for group 3, and Thoracic RT + Pentoxifylline for group 4, and group 5 was the control group.

Results: When groups are evaluated in pairs, significant differences between group 1 and 2, group 1 and 4, and group 1 and 5 were determined (p: 0.002, p: 0.002, p<0.001, respectively). No significant difference was determined between group 1 and 3 (p: 0.161). No significant difference was determined between group 2 and group 3, 4, and 5 (p: 0.105, p: 0.645, p: 0.234, respectively). There was no significant difference between group 4 and 5 (p: 0.645).

Conclusions: The combination of vitamin E and pentoxifylline is efficient in preventing radiation-induced lung fibrosis. The additional benefit of vitamin C, which is added to this combination to increase the antioxidant activity, cannot be shown. It would be useful to investigate the combination of vitamin E, pentoxifylline, and other non-enzymatic antioxidants.