

عنوان مقاله:

Does gallic acid improve cardiac function by attenuation of oxidative stress and inflammation in an elastase-induced lung injury

محل انتشار:

مجله علوم پایه پزشکی ایران، دوره 23، شماره 9 (سال: 1399)

تعداد صفحات اصل مقاله: 9

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خلاصه مقاله:

Objective(s): Cardiovascular disease has an important role in mortality caused by lung injury. Emphysema is associated with impaired pulmonary gas exchange efficiency and airflow limitation associated with small airway inflammation. The aim was to evaluate the interactions between lung injury, inflammation, and cardiovascular disease. Since gallic acid has antioxidant and anti-inflammatory effects, we hypothesized that gallic acid protects the lung and the related heart dysfunction in elastase-induced lung injury. **Materials and Methods:** Forty-eight Sprague-Dawley male rats were randomly divided into six groups: Control, Porcine pancreatic elastase (PPE), PPE+GA, and 3 groups for different doses of gallic acid (GA 7.5, GA 15, GA 30 mg/kg). PPE was injected intra-tracheally on days 1 and 10 of the test. In each group, electrocardiography, hemodynamic parameters, oxidative stress, and bronchoalveolar lavage fluid were examined. **Results:** PPE administration showed a decrease in HR and QRS voltage of electrocardiogram parameters, as well as in hemodynamic parameters ($P<0.05$, $P<0.01$, and $P<0.001$) and superoxide dismutase (SOD) ($P<0.05$). Tumor Necrosis Factor α (TNF- α) ($P<0.001$), interleukin 6 (IL-6) ($P<0.001$), interleukin 6 (MDA) ($P<0.001$), and the total number of white blood cells ($P<0.001$) showed an increase in PPE groups. Gallic acid preserved the values of hemodynamic properties, oxidative stress, inflammation, and electrocardiogram parameters in comparison to the PPE group. **Conclusion:** Briefly, this study showed the valuable effect of gallic acid in cardiac dysfunction related to elastase-induced lung injury. These findings suggested that gallic acid, as a natural antioxidant, has a potential therapeutic effect on preventing oxidative stress, inflammation, and subsequent cardiovascular disease.

کلمات کلیدی:

Cardiovascular Disease, Gallic acid, Hemodynamic parameters, Inflammation, Lung injury, PPE, Rat

