

Green Tea Extract: Its Potential Protective Effect on Bleomycin Induced Lung Injuries in Rats

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Abstract : Lung fibrosis is a common side effect of the chemotherapeutic agent, bleomycin. Current evidence suggests that reactive oxygen species may play a key role in the development of lung fibrosis. The present work studied the effect of green tea extract on bleomycin-induced lung fibrosis in rats. Animals were divided into three groups: (1) Saline control group; (2) bleomycin group in which rats were injected with bleomycin (15mg/kg,i.p.) three times a week for four weeks; (3) bleomycin and green tea group in which green tea extract was given to rats (100mg/kg/day, p.o) a week prior to bleomycin and daily during bleomycin injections for 4 weeks until the end of the experiment. Bleomycin-induced pulmonary injury and lung fibrosis that was indicated by increased lung hydroxyproline content, elevated nitric oxide synthase, myeloperoxidase (MPO), platelet activating factor (PAF), tumor necrosis factor α (TNF $_{\alpha}$), transforming growth factor 1 β (TGF1 β) and angiotensin converting enzyme (ACE) activity in lung tissues. On the other hand, bleomycin induced a reduction in reduced glutathione concentration (GSH). Moreover, bleomycin resulted in a severe histological changes in lung tissues revealed as lymphocytes and neutrophils infiltration, increased collagen deposition and fibrosis. Co-administration of bleomycin and green tea extract reduced bleomycin-induced lung injury as evaluated by the significant reduction in hydroxyproline content, nitric oxide synthase activity, levels of MPO, PAF, TNF- α , and ACE in lung tissues. Furthermore, green tea extract ameliorated bleomycin- induced reduction in GSH concentration. Finally, histological evidence supported the ability of green tea extract to attenuate bleomycin-induced lung fibrosis and consolidation. Thus, the finding of the present study provides that green tea may serve as a novel target for potential therapeutic treatment of lung fibrosis.

Keywords : bleomycin, lung fibrosis, green tea, oxygen species

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