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## Histological and Immunohistochemical Study to Evaluate the Effects of Metformin versus Green Tea Extracts on Bleomycin Induced Lung Injury In Adult Male Albino Rats

Mohamed Salah Elgendy, Asmaa Mohamed Elsayed, Doaa Ebrahim Eldosokey  
and Amany Kareem Abd Elmaqsoud

Department of Histology, Faculty of Medicine, Fayoum University, Egypt

**Introduction:** Bleomycin is a widely used chemotherapy, which is used in the treatment of many tumors. Lung injury especially pulmonary fibrosis is considered as one of the most common side effects of it.

**Aim of the work:** we aimed to evaluate the possible effect of Green tea versus Metformin on Bleomycin induced pulmonary injury in adult male albino rats.

**Material and Methods:** 48 adult male albino rats were used in this study. The rats were divided into six groups of eight rats each. Control group, Bleomycin group, Bleomycin with Green tea group, Bleomycin with Metformin group, green tea group and Metformin group. Bleomycin was administered intra-tracheally to ensure induction of fibrosis. All animals were sacrificed after 14 days of starting the experiment. The lung sections were prepared and stained with H&E stain, Mallory's trichrome stain and immunohistochemical staining for alpha smooth muscle actin ( $\alpha$  – SMA). Morphometric measurements and statistical analysis were performed.

**Results:** There was marked multifocal distortion of the lung architecture with significant increase of area % of collagen deposition and  $\alpha$  –SMA staining in Bleomycin group compared to control group. There was noticeable partial preservation of normal lung structure in combined Bleomycin with either Metformin or Green tea groups compared to Bleomycin group. The effect of Green tea was more obvious than Metformin, which still showed more areas of congestion and hemorrhage in the lung. In addition to significant decrease in area % of collagen deposition and  $\alpha$ -SMA in both combined Bleomycin with either Green tea or Metformin groups compared to Bleomycin group. While both Metformin and Green tea groups appeared as the control.

**Conclusion:** we can conclude that administration of either Green tea or Metformin can attenuate Bleomycin induced lung injury. Green tea produced more protective effect than Metformin.

**Key Words:**  $\alpha$  –SMA, Bleomycin, Green tea, lung, Metformin.

عميد الكلية  
أ.د / حمدي إبراهيم

رئيس قسم الهستولوجي  
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