

Effect of *Holothuria atra* Body Wall Extract on Pulmonary Fibrosis and Oxidative Stress caused by Bleomycin in Rat

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ABSTRACT

Introduction: Idiopathic pulmonary fibrosis leads to the misplaced deposition of the extracellular matrix and stiffness parenchyma and the creation of scarring (fibrosis) in the lung. This study was conducted to investigate the effectiveness of different doses of *Holothuria atra* body wall extract on bleomycin (BLM)-induced pulmonary fibrosis.

Methods and Materials: Animals were randomly divided into six groups (n = 6). The control group received normal saline intratracheally as a single dose on day one. The BLM group received a single intratracheal dose of BLM (7.5 IU/kg) along with daily doses of normal saline by gavage. The pirfenidone group received a single intratracheal dose of BLM (7.5 IU/kg) and daily doses of pirfenidone by gavage. The remaining groups also received a single intratracheal dose of BLM (7.5 IU/kg) and were administered daily doses of *H. atra* extract at 50, 100, and 200 mg/kg. Finally, the rats were euthanized, and the lung tissues were taken out for histological analysis and biochemical assessments.

Results: Histological tests showed that BLM could induce marked pulmonary fibrosis within two weeks. Administration of a hydroalcoholic extract of *H. atra* body wall reduced these damages in lung tissue in a dose-dependent manner. The best results were obtained with the consumption of 200 mg/kg per day of the extract of *H. atra* body wall.

Conclusion and Discussion: The findings of the present study suggest that the extract of *H. atra* body wall can reduce the toxic effects of BLM on lung tissues. Such an effect of *H. atra* can be attributed to the compounds of this plant, which have anti-inflammatory and antioxidant properties.

Keywords: Bleomycin sulfate, *Holothuria atra*, Oxidative stress, Pulmonary fibrosis