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Preclinical Models of Lung Fibrosis: A Gateway for Clinical Research

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Abstract

Lung fibrosis (LF) is a form of a severe respiratory disorder that has a survival period of about three to five years after diagnosis. Lung fibrosis is a group of lung disorders characterized by progressive scarring of alveolar tissues. Many models, such as irradiation, exposure to toxins like bleomycin, silica, and fluorescein isothiocyanate and the expression of particular genes using viral vectors or transgenic systems are utilized to examine this disease. A recent model involving repetitive bleomycin lung injury has also been developed, leading to significant lung fibrosis, specifically hyperplasia of alveolar epithelial cells, and persistent abnormal remodelling even after the removal of the stimulus. This model contributes significantly to the pre-existing animal models for lung fibrosis, allowing for the study of temporal heterogeneity and long-term effects. Various in vitro models such as in vitro 2D tissue culture plastic model along with in vitro 3D hydrogel system model and recently developed humanized model has also been discussed in this review. Each of these reviewed models provides a valuable tool for investigating different aspects of lung fibrosis.

Keywords: Fibrotic Lung, Bleomycin, Silica, Fibroblasts, Isothiocyanate and In vitro model.

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