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Effects of hydroxycamptothecin on the expression of matrix metalloproteinase-1 (MMP-1), tissue inhibitor of MMP-1, and type I collagen in rats with pulmonary fibrosis

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ABSTRACT. The aim of this study was to investigate the effects of hydroxycamptothecin (HCPT) on the expression of matrix metalloproteinase-1 (MMP-1), tissue inhibitor of MMP-1 (TIMP-1), and type I collagen in the lung tissue of rats with pulmonary fibrosis induced by bleomycin A5. We used hematoxylin eosin staining to observe the degree of pulmonary fibrosis in rats; Masson staining, reverse transcription polymerase chain reaction, and immunohistochemistry were used to observe the expression of collagen, MMP-1, and TIMP-1, and type I collagen. The expression of MMP-1 in the model group decreased significantly, while the expression of TIMP-1 and type I collagen significantly increased. After treatment with HCPT, the degree of pulmonary fibrosis and the expression of TIMP-1 and type I collagen decreased in all treatment groups. However, the expression of MMP-1 increased in a dose-dependent manner. Our results showed that HCPT decreased the pulmonary fibrosis induced by bleomycin A5 in rats,

and an increase in MMP-1 expression and decrease in the TIMP-1 and type I collagen expression may be the mechanism that regulates the metabolism of the extracellular matrix.

Key words: Pulmonary fibrosis; Hydroxycamptothecin; Type I collagen; Matrix metalloproteinase-1; Matrix metalloproteinase inhibitors-1

