

Anti-fibrotic effects of silymarin on bleomycin-induced pulmonary fibrosis in mice

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Background and Aims: Silymarin, the active principle of *Silybum marianum*, plays antifibrotic effects in hepatic fibrosis by several mechanisms. Since the pathogenesis of fibroproliferative diseases is similar, the effect of silymarin on bleomycin-induced pulmonary fibrosis was evaluated in this study.

Methods: Pulmonary fibrosis was induced by surgical intratracheal administration of bleomycin (3 U/kg) in female mice. Silymarin (50 mg/kg) was administered intraperitoneally (i.p.) two days before the bleomycin instillation and throughout the test interval in mice. Control mice were instilled with the same volume of saline. After two weeks, lung tissues of mice were evaluated for fibrosis through biochemical measurement of collagen deposition (by spectrophotometric assay of hydroxyproline) and histological analysis of pathological lung changes (by Masson's trichrome staining). The wet lung weight was also compared between silymarin group and fibrotic group as a marker of inflammation. Data were evaluated by one-way ANOVA and Dunnett analysis. $P < 0.05$ was considered as significant.

Results: Bleomycin significantly ($P < 0.05$) increased the lung collagen content and induced the fibrotic histological changes. Pretreatment with silymarin significantly ($P < 0.05$) prevented the increase in lung collagen content and also partially inhibited the histologic changes induced by bleomycin. The wet lung weight in silymarin group was similar to that of control and was significantly lower than bleomycin group ($P < 0.001$).

Conclusions: By reduction of collagen deposition and inflammation, silymarin exerted protective effects against fibrogenic action of bleomycin on lung. These results may be important in the treatment of pulmonary fibrosis in future.

Keywords: Silymarin; Bleomycin; Pulmonary fibrosis; Hydroxyproline