Effect of compound Maqin decoction on TGF-β1/Smad proteins and IL-10 and IL-17 content in lung tissue of asthmatic rats

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Received August 27, 2015
Accepted December 7, 2015
Published September 2, 2016
DOI http://dx.doi.org/10.4238/gmr.15037539

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ABSTRACT. In this research, compound Maqin decoction (CMD) has been shown to positively affect in airway inflammation of asthma models. We evaluated the effects of CMD on the expression of transforming growth factor (TGF)-β1/Smad proteins, interleukin (IL)-17, and IL-10 in lung tissue of asthmatic rats. Asthma was induced in a rat model using ovalbumin. After a 4-week treatment with CMD, rats were killed to evaluate the expression of TGF-β1 and Smad proteins in lung tissue. IL-10 and IL-17 levels in lung tissue homogenates were determined by ELISA. The expression of TGF-β1 and Smad3 protein increased, whereas expression of Smad7 protein decreased upon high-dose or low-dose treatment with CMD or by intervention with dexamethasone, compared to the control. There was a significant difference between treatment with a high dose CMD and the control treatment, but no significant difference was found between high-dose CMD treatment and dexamethasone intervention.
The expression of TGF-β1 and Smad7 protein increased, whereas the expression of Smad3 protein decreased in the model group compared to other groups. In the CMD high-dose group, low-dose group, and dexamethasone intervention group, the IL-17 concentrations in lung tissue homogenates were decreased, while IL-10 levels were increased. Again, there was a significant difference between CMD high-dose and control treatment, but not between CMD high-dose treatment and dexamethasone intervention. Thus, positive effects of CMD against asthmatic airway remodeling may be due to its regulatory effect on TGF-β1, Smad3, and Smad7 protein levels and on cytokines such as IL-10 and IL-17.

Key words: Asthma; TGF-β; Smad protein; IL-10; IL-17