

Rhynchophylline attenuates allergic bronchial asthma by inhibiting TGF-1-induced Smad and MAPK signaling transductions in vivo and in vitro

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Rhynchophylline (Rhy) is a major active component of *Uncaria rhynchophylla* and shows the potential to inhibit the proliferation of airway smooth muscle cells (ASMCs). In the current study, it was hypothesized that Rhy played a key role in the anti-asthma effect of *Uncaria rhynchophylla* via the inhibition of TGF- β 1-induced Smad and MAPK signaling. The effect of Rhy on allergic asthma mice and the changes of TGF- β 1-induced Smad and MAPK signaling under Rhy administration was detected to underlie the mechanism associated with the Rhy treatment. The effect of Rhy on the proliferation of ASMCs and TGF- β 1-induced Smad and MAPK signaling in vitro was investigated as well. Administration of Rhy attenuated the recruitment of eosinophils in BALF, which was associated with the suppressed production of IgE and pro-inflammation cytokines. Administration of Rhy suppressed the expression of TGF- β 1, Smad4, p-Smad2, and p-Smad3 induced by OVA while induced the expression of Smad7. Furthermore, Rhy inhibited the proliferation of ASMCs and similar to the results of in vivo assay, Rhy blocked the hyperplasia signaling transduction of TGF- β 1 pathway. The current study demonstrated the anti-asthma effect of Rhy, which depended on the inhibition of TGF- β 1-induced Smad and MAPK signaling.