



Abstract

SG Induces Smooth Muscle Cell Apoptosis via PKC α inhibition by NO production through iNOS induction

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We have recently demonstrated that *Siegesbeckia glabrescens*(SG), herbal medicine, induces apoptosis via NO production in human aortic vascular smooth muscle cells(HAVSMCs). However, the molecular pathways involved in SG-mediated apoptosis is completely unknown. In the present study, we investigated the cellular mechanism of SG-induced apoptosis in HAVSMCs.

SG produced NO through iNOS induction. The apoptotic effect of SG was attenuated by L-NNA, NOS inhibitor. In the presence of L-NNA, the degradation of procaspase-3 by SG was inhibited. SG treatment induced an decrease in Bcl-2 expression but no affect on Bax expression. In addition, SG treatment evoked PKC α and p-PKC α downregulation. These results were reversed by addition of L-NNA.

Treatment of HAVSMCs with PMA(phorbol 12-myristate 13-acetate), PKC activator, for 24hrs, increased the apoptotic responses to SG. It seems likely to be a downregulation of PKC α due to long term treatment with PMA.

Taken together, the results suggest that apoptotic effects of SG through NO production via iNOS mRNA expression include, at least in part, Bcl-2 and PKC α downregulation, and caspase-3 activation.