

عنوان مقاله:

Beta-adrenergic receptor stimulation, histamine receptor inhibition, and potassium channel opening contribute to the relaxant effects of crocetin on airway smooth muscle

محل انتشار:

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نویسندگان:

Sepide Behrouz - Applied Biomedical Research Center, Mashhad University of Medical Sciences, Mashhad, Iran

Arghavan Memarzia - Applied Biomedical Research Center, Mashhad University of Medical Sciences, Mashhad, Iran

Mohammad Hossein Eshaghi Ghalibaf - Applied Biomedical Research Center, Mashhad University of Medical Sciences, Mashhad, Iran

Mohammad Hossein Boskabady - Applied Biomedical Research Center, Mashhad University of Medical Sciences, Mashhad, Iran

خلاصه مقاله:

Objective(s): In the present study, the relaxant effect of crocetin on tracheal smooth muscle cells (TSM) and its possible mechanisms were evaluated. Materials and Methods: The study was conducted on 4 male Wistar rats in 4 groups. TSM was contracted by methacholine ( $10 \mu\text{M}$ ) and KCl ( $60 \text{ mM}$ ), and the relaxant effects of four cumulative concentrations of crocetin, petal extract of saffron, and theophylline were examined on non-incubated and TSM incubated with propranolol, chlorpheniramine, diltiazem, atropine, glibenclamide, and indomethacin were investigated. Results: In non-incubated TSM contracted by methacholine or KCl, crocetin and theophylline showed concentration-dependent relaxant effects (all,  $P < 0.001$ ). However, various concentrations of crocetin showed significantly lower relaxant effects compared to those of theophylline (all,  $P < 0.001$ ). In the methacholine-induced contraction of TSM, the relaxation effect of the last concentration of crocetin in the TSM incubated with propranolol was lower than in non-incubated TSM ( $P < 0.05$ ). In the incubated TSM with chlorpheniramine, the relaxant effects of the two last concentrations of crocetin were significantly lower than in the non-incubated tissues contracted by KCl ( $P < 0.05$  and  $P < 0.001$ ). The levels of  $\text{EC}_{50}$  crocetin in the incubated TSM with glibenclamide, chlorpheniramine, and indomethacin were markedly lower than in non-incubated (all,  $P < 0.05$ ). Conclusion: The results showed potent relaxation effects of crocetin on TSM and were suggested to be through stimulation of  $\beta$ -adrenergic receptors, inhibition of histamine ( $\text{H}_1$ ) receptors, and potassium channel opening mechanisms.

کلمات کلیدی:

Airway smooth muscle, Crocetin, Cyclooxygenase, Histamine receptors, Potassium channels, Relaxant effects

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