Stimulatory effect of Crocus sativus (saffron) on beta2-adrenoceptors of guinea pig tracheal chains.

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Source

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Abstract

To study the mechanism(s) of the relaxant effects of Crocus sativus (Iridaceae), the stimulatory effect of aqueous-ethanolic extracts of this plant and one of its constituent, safranal was examined on beta-adrenoceptors in tracheal chains of guinea pigs. The beta(2)-adrenergic stimulatory was tested by performing the cumulative concentration-response curves of isoprenaline-induced relaxation of pre-contracted isolated guinea pig tracheal chains. The studied solutions were included two concentrations of aqueous-ethanolic extract from Crocus sativus (0.1 and 0.2g%), safranal (1.25 and 2.5 microg), 10nM propranolol, and saline. The study was done in two different conditions including: non-incubated (group 1, n=9) and incubated tissues with 1 microM chlorpheniramine (group 2, n=6). The results showed clear leftward shifts in isoprenaline curves obtained in the presence of only higher concentration of the extract in group 1 and its both concentrations in group 2 compared with that of saline. The EC(50) (the effective concentration of isoprenaline, causing 50% of maximum response) obtained in the presence of both concentrations of the extract (0.17+-0.06 and 0.12+-0.02) and safranal (0.22+-0.05 and 0.22+-0.05) in group 1 and only in the presence of two concentrations of the extract (1.16+-0.31 and 0.68+-0.21) in group 2 was significantly lower compared to saline (1.00+-0.22 and 4.06+-1.04 for groups 1 and 2, respectively) (p<0.05-0.001). The maximum responses obtained in the presence of both concentrations of the extract and safranal in group 1 were significantly lower than that of saline (p<0.005 for all cases). All values (CR-1=(EC(50) obtained in the presence of active substances/EC(50), obtained in the presence of saline)-1) obtained in the presence of higher concentrations of extract in group 1, its both concentrations and higher concentration of safranal in group 2 were negative and there were significant differences in this value between propranolol and those obtained in the presence of extract and safranal (p<0.05 to p<0.001). The results indicated a relatively potent stimulatory effect of the extract from Crocus sativus on beta(2)-adrenoceptors which is partially due to its constituent, safranal. A possible inhibitory effect of the plant on histamine (H(1)) receptors was also suggested.

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