Cardiovascular Effects Induced by Linalool in Normotensive and Hypertensive Rats


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Linalool is a monoterpenic alcohol and constituent of several Brazilian aromatic medicinal plants, popularly used against hypertension. Cardiovascular effects induced by linalool were evaluated. In normotensive rats, (R)-linalool [1, 5, 10, and 20 mg/kg body weight (BW); intravenous (i.v.)]-induced hypotension was associated with tachycardia, which was attenuated by atropine (2 mg/kg BW) and Nω-nitro-L-arginine methyl ester (20 mg/kg BW), but was not modified after indomethacin (5 mg/kg BW) administration. In hypertensive rats, linalool [200 mg/kg BW; oral (v.o.)] reduced blood pressure without changing the heart rate. In intact rings of rat mesenteric artery precontracted with 10 µM phenylephrine, linalool (from 6.4 · 10^-6 to 6.4 · 10^-3 M) induced relaxations in a concentration-dependent manner [E_max = (115 ± 13)%] that were not changed after atropine administration [E_max = (105 ± 2)%], and were not different from those obtained in endothelium-denuded rings precontracted with phenylephrine [E_max = (108 ± 7)%] or 80 mM KCI [E_max = (113 ± 7)%] or tetraethylammonium incubation [E_max = (105 ± 12)%]. Linalool (1.9 · 10^-3 M) antagonized the contractions induced by CaCl_2 (3 · 10^-6 – 10^-2 M) (maximal inhibition, 81%). Furthermore, linalool inhibited the contractions induced by 10 µM phenylephrine or 20 mM caffeine. In conclusion, these results demonstrate that linalool reduces blood pressure probably due to a direct effect on the vascular smooth muscle leading to vasodilation.

Key words: Linalool, Arterial Pressure, Vascular Smooth Muscle