Cardiovascular Effects Induced by Linalool in Normotensive and Hypertensive Rats

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Linalool is a monoterpene alcohol and constituent of several Brazilian aromatic medicinal plants, popularly used against hypertension. Cardiovascular effects induced by linalool were evaluated. In normotensive rats, (∂)-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 N^G-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 $6.4 \cdot 10^{-6}$ to $6.4 \cdot 10^{-3}$ 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 KCl [E_{max} = (113 ∂ 7)%] or tetraethylammonium incubation [E_{max} = (105 ∂ 12)%]. Linalool ($1.9 \cdot 10^{-3}$ M) antagonized the contractions induced by $CaCl_2$ ($3 \cdot 10^{-6}$–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