



**Cardiovascular effects of a fraction from Thai mistletoe,  
*Dendrophthoe pentandra* (L.)**

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## Abstract

Bioassay directed fractionation of water extract from dried leaves of *Dendrophthoe pentandra* resulted in the isolation of a hypotensive fraction which is a mixture of polyphenolic substances. In the *in vivo* preparation, intravenous injection of the hypotensive fraction (0.4-16.0 mg/kg) caused a decrease in both mean arterial blood pressure and heart rate of anesthetized rats in a dose-dependent manner. In addition, a double response on decrease in blood pressure and heart rate was obtained at higher doses of the hypotensive fraction. The first phase of hypotension was blocked by pre-treatment of the animals with atropine (1.5 mg/kg, i.v.), while the second phase of the hypotensive response was blocked by pre-treatment of the animals with propranolol (0.6 mg/kg). For the decrease in heart rate, both phases of hypotension were blocked by pre-treatment of the animals with atropine or propranolol. In the *in vitro* preparation, the hypotensive fraction caused vasodilatation of endothelium-intact thoracic aortic rings (pre-constricted with phenylephrine). This effect was abolished by pre-incubation of the blood vessels with N<sup>o</sup>-nitro-L-arginine (300 mM), a specific nitric oxide synthase inhibitor, or by removing the vascular endothelium. Pre-incubation of the endothelium-intact thoracic aortae with atropine or propranolol, did not abolish the vasodilation by the fraction. Pre-incubation the blood vessels with both

atropine and propranolol caused an increase in sensitivity to vasodilatation by the fraction. Low concentrations of the fraction caused an increase in both rate and force of atrial contraction, while higher concentrations of the fraction caused a transient decrease before a further increase in contraction rate of the isolated atria. The increase in atrial rate and force was blocked by pre-incubation of the atria with propranolol, while the decrease in atrial rate was blocked by pre-incubation the atria with atropine. These results suggest that the mechanisms involved for the hypotensive activity of the hypotensive fraction may operate through  $\beta$ -adrenergic and muscarinic receptors at the atria, and an indirect effect causing the blood vessel to dilate by stimulated release of nitric oxide from the vascular endothelial cells via non- $\beta$ -adrenergic and non-muscarinic receptors.

*Keywords:* *Dendrophthoe pentandra*, Loranthaceae, blood pressure, thoracic aorta,

atria

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