**Title**: Propranolol and pseudoginsenoside-RT in vitro and in vivo studies on the cardiovascular effects of Randia siamensis extracts

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**Keywords**: propranolol, pseudoginsenoside-RT, Randia siamensis, cardiovascular system.
Randia siamensis is used in Thai Traditional medicine for controlling blood pressure and inducing abortion. This study aimed to investigate the cardiovascular effects of a crude n-butanol extract from fresh fruits of Randia siamensis and to identify the cardiovascular active substances from the Randia siamensis extract. The cardiovascular effects of the Randia siamensis extract were studied in normal and reserpinized rats. In each case, studies were made in vivo with anesthetized rats and in vitro with the isolated left and right atria, the thoracic aorta and the mesenteric arteries. Three different activities on the cardiovascular system were detected, a hypertensive effect, a positive chronotropic effect, and a hypotensive effect. Bioactive constituents of the Randia siamensis extract were separated using bioactive-directed fractionation with different chromatography columns and semi-preparative HPLC. 4 new pseudoginsenoside compounds were separated, pseudoginsenoside-RT₂, -RT₃, -RT₄ and -RT₅, together with 7 known compounds. Tyramine was responsible for the hypertensive and positive chronotropic effects of the Randia siamensis extract by stimulating release of catecholamines, most likely from the sympathetic nerve terminals and the adrenal medulla. The released catecholamines acting via the α-adrenergic receptors caused vasoconstriction of the vascular system thereby increasing blood pressure, and via the β-adrenergic receptors of the heart to cause the positive chronotropic activity or increase in heart rate. The hypotensive effect of the Randia siamensis extract was unmasked when the animals were pretreated with phentolamine and propranolol. It is likely that pseudoginsenoside-RT₁ and pseudoginsenoside-RP₁ were responsible for this effect by acting directly on the resistance vessels and causing vasodilatation, thereby decreasing the blood pressure.