UNIVERSITI TEKNOLOGI MARA

MECHANISM OF ANTI-HYPERTENSIVE EFFECT OF STANDARDISED AQUEOUS ETHANOLIC EXTRACT OF *FICUS DELTOIDEA TRENGGANUENSIS* IN SPONTANEOUSLY HYPERTENSIVE RATS

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MSc

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AUTHOR'S DECLARATION

I declare that the work in this thesis was carried out in accordance with the regulations of Universiti Teknologi MARA. It is original and is the result of my own work, unless otherwise indicated or acknowledged as referenced work. This thesis has not been submitted to any other academic institution or non-academic institution for any degree or qualification.

I, hereby, acknowledge that I have been supplied with the Academic Rules and Regulations for Post Graduate, Universiti Teknologi MARA, regulating the conduct of my study and research.

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ABSTRACT

The leaves of *Ficus deltoidea* are often used in traditional medicine for the treatment of a number of ailments. However, evidence about its anti-hypertensive activity remains undetermined although its extract has been shown to have angiotensin converting enzyme (ACE) inhibitory activity *in vitro*. This study therefore investigates the anti-hypertensive effect of a standardised aqueous ethanolic extract of the leaves of *Ficus deltoidea Trengganuensis* (FDT) in Spontaneously Hypertensive Rats (SHRs). Thirty, male SHRs, aged 12 to 14 weeks, weighing 220 to 270g and with a systolic blood pressure (SBP) of greater than 150 mmHg were divided into 5 groups (n=6). Each group was treated daily, via the oral route, for 4 weeks either with 800, 1000 or 1200 mg/kg body weight of standardised aqueous ethanolic extract of leaves of FDT. Controls were given either 10 mg/kg body weight of losartan or 0.5 ml of distilled water. Blood pressure was measured weekly using tail cuff plethysmography. Urinary and serum calcium, sodium, potassium and total protein concentrations were analysed. Endothelial nitric oxide synthase (eNOS), endothelin 1 (ET-1) concentrations, total antioxidant status (TAS) and major components of the renin-angiotensin-aldosterone system (RAAS), including renin, ACE, angiotensin (Ang) I, ACE2, Ang II and aldosterone were determined using ELISA. Data were analysed using ANOVA. SBP was significantly lower at week 4 in rats receiving 1200 mg FDT ($p<0.05$) or losartan ($p<0.001$) when compared with that in the controls. No significant differences were evident in body weight and urine output between the groups. There were also no significant differences in urinary and serum calcium, sodium, potassium and total protein excretion rates between the groups. No significant differences were evident in concentrations of components of RAAS when compared with that in the control groups. However, the concentrations of ET-1, eNOS and TAS were significantly lower in FDT treated rats. In conclusion, daily oral administration of 1200 mg FDT for four weeks significantly lowers blood pressure in SHR. However, it is unlikely to involve the RAAS or electrolyte excretion as no differences were detected in any of these between control and treated rats. The precise mechanism therefore remains to be determined.

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