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Key Words

Blood pressure;
Stevioside;
Spontaneously hypertensive rats;
Dogs

Hypotensive Effect of Intravenous Stevioside in Conscious and Anesthetized Animals

ABSTRACT

Stevioside is a natural sweet-tasting glycoside isolated from the herb *Stevia rebaudiana*, composed of stevia, a diterpenic carboxylic alcohol with 3 glucose molecules, and is mainly used as a substitute non-caloric sweetener. It has previously been shown to reduce blood pressure in studies in animals and humans. The antihypertensive effects of stevioside were evaluated in conscious and anesthetized spontaneously hypertensive rats (SHRs) and anesthetized dogs. The systolic blood pressure (SBP) and diastolic blood pressure (DBP) were dose-dependently reduced ($p < 0.05$) and the duration of the hypotensive effect was dose-dependently prolonged by stevioside at doses of 50, 100, and 200 mg/kg intravenously in conscious SHRs. The maximal hypotensive intensity on SBP and DBP was $31.4\% \pm 4.2\%$ (mean \pm SD) and $40.8\% \pm 5.6\%$, respectively, and the effect lasted for more than 60 min at a dose of 200 mg/kg. SBP and DBP were also reduced in dose-dependent manners at doses from 25 to 400 and from 15 to 150 mg/kg intravenously in anesthetized SHRs and dogs, respectively ($p < 0.01$). The dose-effect relationship was most remarkable at doses from 50 to 250 and from 50 to 150 mg/kg intravenously in anesthetized SHRs and dogs, respectively. These results suggest that stevioside can lower blood pressure effectively, especially DBP. (N. Taipei J. Med. 2001; 3:176-181)

INTRODUCTION

Hypertension is an important risk factor for cardiovascular mortality and morbidity in epidemiological studies.^{1,2} Improvements in identification and treatment of hypertension have contributed to a major reduction in the incidence of cardiovascular disease in many countries.^{3,4} Despite these major advancements

in detection and pharmacological treatment of hypertension, inadequate blood pressure control persists as a major public health problem.⁵ Compliance of patients with hypotensive therapy may be an important barrier to optimal blood pressure control as some antihypertensive drug treatments may have negative impacts on the quality of life.^{6,7} If a new antihypertensive agent could be developed with good efficacy and tolerability,

Received: December 1, 2000
Accepted: April 9, 2001

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