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Title: Factors Regulating Nitric Oxide Production in Spontaneously Hypertensive Rats Treated with Piper Sarmentosum Aqueous Extract

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Abstract: Introduction: Hypertension is a major risk factor for cardiovascular diseases which is one of the leading causes of death worldwide. Piper sarmentosum (PS) has been widely used in traditional medicine with proven antihypertensive and antioxidant effects. This study aims to evaluate the antihypertensive potential of PS aqueous extract (PSAE) and to investigate the factors modulating nitric oxide (NO) production through its anti-oxidant activities. Methods: PS leaves were extracted with distilled water, freeze-dried and examined to quantify their antioxidant activities through 2,2-diphenyl-1-picrylhydrazyl and ferric reducing ability plasma test. The antihypertensive effect of PSAE in spontaneous hypertensive rats (SHR) was evaluated using four different groups (n=6); C (negative control), K (PSAE 500mg/kg), P (3 mg/kg perindopril) and M (PSAE 500 mg/kg + 1.5 mg/kg perindopril). PSAE and other treatments were given via oral gavage for 28 days. The blood pressure (BP) was determined using the non-invasive BP monitoring tail cuff technique and recorded weekly. SHR's blood was collected to determine the serum NO level using Griess assay. Asymmetric dimethylarginine (ADMA) and arginine levels were determined using high performance liquid chromatography. Results: The extract showed good in-vitro antioxidant activities and a significant reduction in both systolic and diastolic BP compared to control group. They were also a decrease in plasma ADMA and an increase in serum NO level. Meanwhile, arginine level does not change significantly. Conclusion: High in-vitro antioxidant activities in PSAE enhances the clearance of ADMA that leads to an increase in serum NO production hence ameliorating the blood pressure of SHR.

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