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The use of Piper sarmentosum leaves aqueous extract (Kadukmy (TM)) as antihypertensive agent in spontaneous hypertensive rats

By: Zainudin, MM (Zainudin, Maizura Mohd)^[1,2]; Zakaria, Z (Zakaria, Zaiton)^[1]; Nordin, NAMM (Nordin, Nor Anita Megat Mohd)^[1]

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Abstract

Background: The National Health and Morbidity Survey in 2011 estimated that 35.1% (5.7 million) of Malaysian adults aged 18 and older suffer from hypertension. Hypertension is still treated by conventional medicine despite its exact aetiology being unknown. Studies showed that oxidative stress and low availability of nitric oxide (NO) causes an increase in vascular wall tension and increase blood pressure. Piper sarmentosum (PS) a traditional Malay herbal plant is well known for its high antioxidant content. Antioxidant is useful in improving cardiovascular diseases particularly hypertension. Thus, it is beneficial to determine the effect of PS leaves aqueous extract (Kadukmy (TM)) on the blood pressure, NO level, oxidative stress markers and serum cholesterol level of the Spontaneous Hypertensive Rats (SHR).

Methods: Rats were divided into five groups consisting of three treatment groups and two control groups. Baseline blood investigations were done before and following commencement of treatment. Spontaneous hypertensive rats were treated for 28 consecutive days and the blood pressure was measured weekly.

Results: Kadukmy (TM) administration showed a significant reduction in systolic blood pressure (SBP), diastolic blood pressure (DBP) and mean arterial pressure (MAP) ($P < 0.05$), increased serum NO level ($P < 0.05$), reduced serum malondialdehyde (MDA) level ($P < 0.05$) and reduction of serum total cholesterol level in groups treated with Kadukmy-1 (TM).

Conclusions: The result of the present study revealed that Kadukmy (TM) exerts its antioxidant activity to reduce oxidative stress damage, increase NO production and able to reduce blood pressure and cholesterol level.

Keywords

Author Keywords: Piper sarmentosum; Hypertension; Aqueous; Nitric oxide; Oxidative stress; Antioxidant

KeyWords Plus: OXIDATIVE STRESS; BLOOD-PRESSURE; NITRIC-OXIDE; ENDOTHELIAL DYSFUNCTION; GENE-EXPRESSION; MALONDIALDEHYDE; RELAXATION; ARTERY; CELLS; RISK

Author Information

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The use of Piper sarmentosum leaves aqueous extract (Kadukmy™) as antihypertensive agent in spontaneous hypertensive rats (Article)

Mohd Zainudin, M.^{ab} , Zakaria, Z.^a , Megat Mohd Nordin, N.A.^a ^a Universiti Kebangsaan Malaysia Medical Center, Department of Physiology, Faculty of Medicine, Jalan Raja Muda Abdul Aziz, Kuala Lumpur, Malaysia^b International Islamic University Malaysia, Department of Basic Medical Sciences (Physiology), Kulliyah of Medicine, Jalan Sultan Ahmad Shah, Bandar Indera Mahkota, Pahang, Kuantan, Malaysia View references (45)

Abstract

Background: The National Health and Morbidity Survey in 2011 estimated that 35.1% (5.7 million) of Malaysian adults aged 18 and older suffer from hypertension. Hypertension is still treated by conventional medicine despite its exact aetiology being unknown. Studies showed that oxidative stress and low availability of nitric oxide (NO) causes an increase in vascular wall tension and increase blood pressure. Piper sarmentosum (PS) a traditional Malay herbal plant is well known for its high antioxidant content. Antioxidant is useful in improving cardiovascular diseases particularly hypertension. Thus, it is beneficial to determine the effect of PS leaves aqueous extract (Kadukmy™) on the blood pressure, NO level, oxidative stress markers and serum cholesterol level of the Spontaneous Hypertensive Rats (SHR). **Methods:** Rats were divided into five groups consisting of three treatment groups and two control groups. Baseline blood investigations were done before and following commencement of treatment. Spontaneous hypertensive rats were treated for 28 consecutive days and the blood pressure was measured weekly. **Results:** Kadukmy™ administration showed a significant reduction in systolic blood pressure (SBP), diastolic blood pressure (DBP) and mean arterial pressure (MAP) ($P < 0.05$), increased serum NO level ($P < 0.05$), reduced serum malondialdehyde (MDA) level ($P < 0.05$) and reduction of serum total cholesterol level in groups treated with Kadukmy-1™. **Conclusions:** The result of the present study revealed that Kadukmy™ exerts its antioxidant activity to reduce oxidative stress damage, increase NO production and able to reduce blood pressure and cholesterol level. © 2015 Mohd Zainudin et al.; licensee BioMed Central.

Author keywords

Antioxidant; Aqueous; Hypertension; Nitric oxide; Oxidative stress; Piper sarmentosum

Indexed keywords

EMTREE drug terms: antihypertensive agent; cholesterol; malonaldehyde; nitric oxide; Piper sarmentosum extract; plant extract; unclassified drug**EMTREE medical terms:** animal experiment; animal model; antioxidant activity; Article; blood pressure; blood pressure measurement; cholesterol blood level; controlled study; diastolic blood pressure; hypertension; male; mean arterial pressure; nonhuman; oxidative stress; plant leaf; rat; spontaneously hypertensive rat; systolic blood pressure**Chemicals and CAS Registry Numbers:** cholesterol, 57-88-5; malonaldehyde, 542-78-9; nitric oxide, 10102-43-9**Drug tradename:** kadukmy.

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