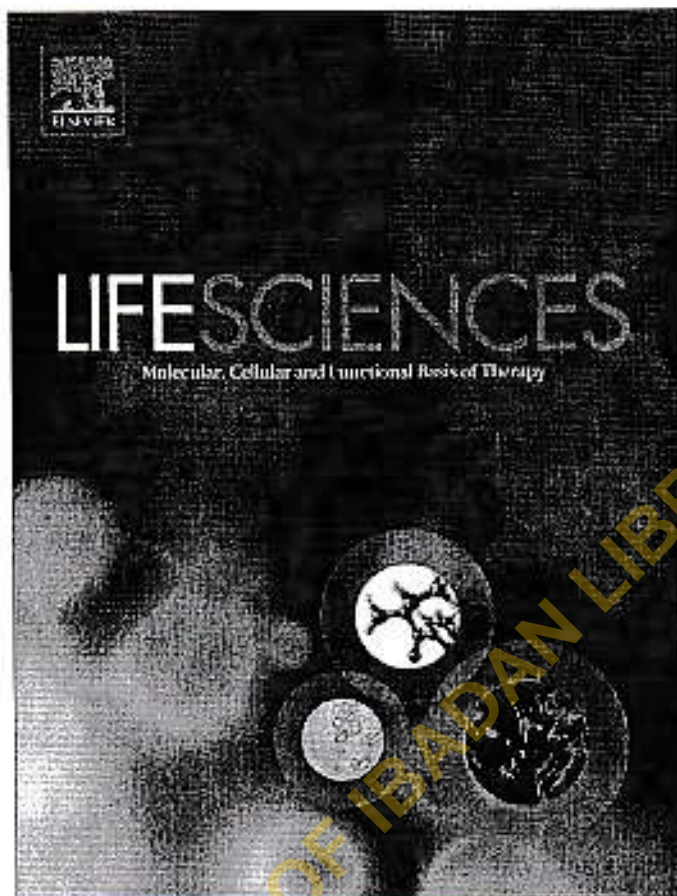


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Peristrophe roxburghiana leaf extracts exhibited anti-hypertensive and anti-lipidemic properties in L-NAME hypertensive rats

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ABSTRACT

Aims: Hypertension is a global disease that has been combating the world health for ages. *Peristrophe roxburghiana* (PR) is used in traditional medicine to treat hypertension and other ailments. The present study examined phytochemical constituents, antioxidant activities and GC-MS analysis of extracts of PR leaf and also evaluated their anti-hypertensive and anti-lipidemic effects in NG-nitro-L-arginine methyl ester (L-NAME) hypertensive rats.

Methods: Wistar rats were grouped into two groups: control and hypertensive. Hypertension was induced in the hypertensive group by oral gavage of 60 mg/kg b.w of L-NAME for 3 weeks. After induction, the hypertensive group was randomly sub-grouped into hypertensive, hypertensive treated and hypertensive untreated groups. These were orally gavaged respectively with 60 mg/kg b.w of L-NAME, 60 mg/kg b.w/day of L-NAME + 200 mg/kg b.w of different extracts of PR (aqueous, ethanolic and methanolic extracts) and 60 mg/kg b.w of L-NAME + 20 mg/kg b.w ramipril for 3 weeks. The blood pressure was measured by tail-cuff method at the third and sixth weeks.

Key findings: The results showed that the extracts of PR significantly decrease blood pressure, pro-atherogenic lipids and atherogenic ratios in L-NAME hypertensive rats. White blood cells count, neutrophil count and creatinine level were also effectively decreased by the extracts. Furthermore, the extracts increase serum nitric oxide (NO) level, anti-atherogenic lipid, glutathione level, lymphocyte and platelet count in the rats.

Significance: Extracts of PR leaf decrease blood pressure and increase NO level in L-NAME hypertensive rats and also corrected the hyperlipidemia and inflammatory response arising from the reduction in NO bioavailability.

1. Introduction

Hypertension is a disease that has been with us for ages and affects every human race [1]. Hypertension is a cardiovascular risk factor connected to several complications which consequently lead to death. Hypertensive state is associated with narrowing, weakening and thickening of vascular wall, which consequently result in atherosclerosis, coronary artery disease, retinopathy, renal disorder, brain infarction with hemorrhage, stroke and finally death [1]. Dyslipidemia is another risk factor associated with the cardiovascular system. It has been implicated in the pathogenesis of several diseases [2]. Elevated cholesterol level is a persistent cardiovascular risk factor resulting in coronary artery disease, atherosclerosis, ischemic heart disease and stroke. High serum total cholesterol (TC) and low-density lipoprotein cholesterol (LDL-C) are cardiovascular disease risk factors, but elevated

level of high-density lipoprotein cholesterol (HDL-C) in the serum prevents the occurrence of cardiovascular diseases. High serum triglyceride (TG) has also been linked to high risk of developing cardiovascular diseases [2].

Malfunctioning in any of the several endogenous blood pressure regulating machineries or mechanisms results in hypertension. Reduction in production of endothelium-vasorelaxing factors such as nitric oxide (NO) and prostacyclin or elevation of endothelium-vasoconstricting factor production, or both result in hypertension [3]. NO is the principal endothelium-vasorelaxation factor that regulates vascular resistance and a decrease its bioavailability plays a central role in the development of hypertension [4] and many disease conditions linked with hypertension [5]. NO has been reported to be the most important factor responsible for the anti-atherosclerotic properties of the endothelium [6]. Besides, nitric oxide synthase (NOS) inhibition has been

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