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Herbal Remedies in Hypertension: Safety and Efficacy Considerations

Riha Franke*

Department of Hypertension, National Institute of Cardiology, Warsaw, Poland

Introduction

Hypertension, or high blood pressure, remains one of the most significant global public health challenges, affecting over 1.2 billion individuals worldwide. While pharmacologic interventions are the mainstay of treatment, limitations such as side effects, cost, access barriers and long-term adherence issues have driven interest in complementary and alternative therapies. Among these, herbal remedies have gained prominence due to their cultural acceptance, affordability and perceived safety. Herbal medicines derived from traditional systems such as Ayurveda, Traditional Chinese Medicine and African traditional medicine are frequently used as either primary or adjunct therapies for hypertension. Despite widespread usage, the safety and efficacy of these herbal interventions remain under continuous scrutiny due to limited clinical validation, variability in preparation and potential herb-drug interactions. This report examines the most commonly used herbal remedies for hypertension, their mechanisms of action, clinical evidence for efficacy and the key safety considerations essential for integrating such treatments into mainstream care [1].

Description

A wide array of herbs has been traditionally utilized for blood pressure regulation, each with distinct active compounds and mechanisms. Garlic (Allium sativum), one of the most studied herbal agents, has been shown to reduce blood pressure through vasodilation, inhibition of Angiotensin-Converting Enzyme (ACE) and antioxidant effects. Meta-analyses of Randomized Controlled Trials (RCTs) indicate modest reductions in both systolic and diastolic blood pressure, particularly in individuals with uncontrolled hypertension. Hibiscus sabdariffa (roselle) has demonstrated antihypertensive effects through diuretic activity and vascular smooth muscle relaxation. Likewise, Rauwolfia serpentina, rich in reserpine, was historically used before the advent of modern antihypertensives but is now limited due to central nervous system side effects. Other botanicals such as Olive leaf extract, Celery seed, Green tea (Camellia sinensis) and Chinese Hawthorn (Crataegus spp.) show promise in preclinical and early clinical trials. These herbs often act via calcium channel blockade, nitric oxide modulation and diuretic properties. However, variation in preparation, dosage and formulation creates challenges in comparing outcomes across studies [2-3].

Although a number of herbal remedies show promise, the clinical evidence base supporting their use in hypertension remains heterogeneous and often limited by methodological weaknesses. Many studies are small, non-randomized, or lack long-term follow-up. Additionally, the use of combination herbal formulations and unstandardized dosing complicates the interpretation of results. While systematic reviews support the short-term efficacy of garlic, hibiscus and green tea, most authors caution that more robust, large-scale trials are necessary to confirm clinical utility and safety. In contrast, certain widely used herbs, such as Licorice root (Glycyrrhiza glabra), may paradoxically increase blood pressure due to sodium retention effects. Furthermore, reliance on surrogate outcomes like blood pressure reduction without assessing cardiovascular endpoints such as stroke, myocardial infarction, or mortality limits the strength of recommendations. There is a pressing need for well-designed clinical trials with standardized products, appropriate control groups and rigorous blinding to evaluate the real-world efficacy of these interventions. Such data are essential for integrating evidence-based herbal medicine into clinical guidelines [4].

Despite the general perception that herbal remedies are “natural and safe,” many pose significant safety concerns, particularly when used concurrently with conventional antihypertensive medications. Herb-drug interactions can alter drug metabolism, enhance or reduce therapeutic effects and increase the risk of adverse reactions. For example, St. John's Wort (Hypericum perforatum), although not directly antihypertensive, induces cytochrome P450 enzymes and can lower the plasma concentration of calcium channel blockers, beta-blockers, or ACE inhibitors. Ginkgo biloba, often used for cognitive enhancement, may interact with antiplatelet or anticoagulant medications and increase bleeding risk. Moreover, unregulated herbal supplements may contain contaminants such as heavy metals, pesticides, or undeclared pharmaceutical substances, particularly in poorly regulated markets. Patients with renal insufficiency or hepatic disorders are at higher risk of toxicity. As such, healthcare providers should routinely inquire about herbal supplement use, especially in populations relying on traditional medicine. Improved regulation, quality assurance and clinician education are necessary to mitigate these risks and ensure patient safety [5].

Conclusion

To maximize patient benefit, an integrative approach that combines evidence-based herbal therapies with conventional medicine is increasingly advocated. In this model, healthcare providers work collaboratively with traditional medicine practitioners to ensure coherent, safe and culturally sensitive care. Patient-centered counseling that respects individual preferences while emphasizing safety and evidence is key to enhancing trust and adherence. Governments and international health organizations are also investing in pharmacovigilance systems and research networks to study traditional medicines more systematically.

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***Address for Correspondence:** Riha Franke, Department of Hypertension, National Institute of Cardiology, Warsaw, Poland, E-mail: franke.riha@nic.pl*

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Conflict of Interest

None.

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