


# Chapter 7

## Medicinal Plants and Secondary Metabolite for the Treatments of Hypertension

**Bui Thanh Tung**

 <https://orcid.org/0000-0002-7308-5039>

*VNU University of Medicine and Pharmacy, Vietnam*

**Dinh Van Anh**

*VNU University of Medicine and Pharmacy, Vietnam*

**Nguyen Thi Van Anh**

*VNU University of Medicine and Pharmacy, Vietnam*

**Nguyen Thi Anh Hong**

*VNU University of Medicine and Pharmacy, Vietnam*

### **ABSTRACT**

*Traditional medicine encompasses a range of ancient, culturally-rooted health practices that were developed long before modern scientific approaches were applied to healthcare. Used for centuries, these practices often involve medicinal plants, which play a role in treating cardiovascular conditions such as heart disease, cerebrovascular disorders, hypertension, and heart failure. Hypertension complicates heart function and contributes to atherosclerosis, thereby increasing the risk of heart attacks and strokes. Although numerous drugs are available to manage these conditions, many commonly used anti-hypertensive medications carry significant side effects. Medicinal herbs contain active compounds with both therapeutic and*

DOI: 10.4018/979-8-3693-9112-9.ch007

*preventive properties, offering potential for the treatment of hypertension. This review provides an overview of several medicinal plants and secondary metabolites that have demonstrated hypertensive or anti-hypertensive effects.*

## INTRODUCE

Cardiovascular diseases (CVDs) are a leading cause of morbidity and premature mortality worldwide, posing a significant public health challenge. Hypertension, often referred to as the “silent killer,” arises from a complex interplay between genetic predisposition and environmental factors, leading to dysregulation of blood pressure control mechanisms (Kamyab et al., 2021). Hypertension (HTN) is the most prevalent risk factor for acute myocardial infarction and is responsible for approximately 16.5% of deaths worldwide each year. It also represents the leading cause of morbidity and mortality associated with cardiovascular diseases (CVDs) (Kamyab et al., 2021). Hypertension is broadly classified into two main types: primary (essential) and secondary. Primary hypertension, accounting for approximately 90–95% of cases, refers to elevated blood pressure without an identifiable medical cause. In contrast, secondary hypertension, comprising 5–10% of cases, results from underlying conditions affecting the kidneys, arteries, heart, or endocrine system. (Tabassum & Ahmad, 2011).

**Essential hypertension** is characterized by elevated blood pressure of unknown etiology and significantly increases the risk of cerebrovascular, cardiac, and renal events. In industrialized countries, the lifetime risk of developing hypertension (defined as blood pressure >140/90 mmHg) exceeds 90%. Essential hypertension often coexists with other cardiovascular risk factors, including aging, obesity, insulin resistance, diabetes mellitus, and hyperlipidemia. Subclinical target-organ damage—such as left ventricular hypertrophy, microalbuminuria, and cognitive impairment—can occur early in the disease course, whereas major adverse events, including stroke, myocardial infarction, renal failure, and dementia, typically arise after prolonged periods of uncontrolled hypertension. (Messerli et al., 2007).

**Secondary hypertension** refers to elevated blood pressure resulting from an identifiable and often reversible underlying cause. Recognizing secondary hypertension is crucial for effective management, as it enables targeted treatment by addressing the root cause. Several conditions are known to induce secondary hypertension, including endocrine disorders such as Cushing's syndrome (characterized by excess cortisol production), hyperthyroidism, hypothyroidism, and adrenal gland tumors. Other common contributors include chronic kidney disease, obesity and metabolic disorders, pre-eclampsia during pregnancy, congenital abnormalities like coarcta-

24 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage: [www.igi-global.com/chapter/medicinal-plants-and-secondary-metabolite-for-the-treatments-of-hypertension/380578](http://www.igi-global.com/chapter/medicinal-plants-and-secondary-metabolite-for-the-treatments-of-hypertension/380578)

## Related Content

---

### The Impact of Social Influence, Information Quality and Online Forum Features on the Credibility of Doctors and Hospitals for Medical Tourism Services

Charlie C. Chen, Makoto Nakayama and Peter Ractham (2018). *Medical Tourism: Breakthroughs in Research and Practice* (pp. 194-210).

[www.irma-international.org/chapter/the-impact-of-social-influence-information-quality-and-online-forum-features-on-the-credibility-of-doctors-and-hospitals-for-medical-tourism-services/191485](http://www.irma-international.org/chapter/the-impact-of-social-influence-information-quality-and-online-forum-features-on-the-credibility-of-doctors-and-hospitals-for-medical-tourism-services/191485)

### Integrative Medicine and Prospective Research on CAM

Mayuree Tangkiatkumjai and Annalisa Casarin (2018). *Complementary and Alternative Medicine and Kidney Health* (pp. 272-301).

[www.irma-international.org/chapter/integrative-medicine-and-prospective-research-on-cam/191970](http://www.irma-international.org/chapter/integrative-medicine-and-prospective-research-on-cam/191970)

### Twin Contributors to the Physiology of Ambulatory Wellbeing and Falls Prevention in Ageing Populations: Functional Senescence and Abnormal Pathological Change

Catherine Hayes (2021). *Integrated Care and Fall Prevention in Active and Healthy Aging* (pp. 1-20).

[www.irma-international.org/chapter/twin-contributors-to-the-physiology-of-ambulatory-wellbeing-and-falls-prevention-in-ageing-populations/285629](http://www.irma-international.org/chapter/twin-contributors-to-the-physiology-of-ambulatory-wellbeing-and-falls-prevention-in-ageing-populations/285629)

### Imagining Care Again: Returning Safety, Quality, and Service to Their Human Roots

(2026). *Real-World Strategies for Implementing Quality and Safety From Hospital to Home Care* (pp. 333-346).

[www.irma-international.org/chapter/imagining-care-again/404900](http://www.irma-international.org/chapter/imagining-care-again/404900)

## Formulation Science in Dysphagia Care: Advances in Oral Drug Delivery Systems for Swallowing Disorders

Charuwan Thanawiroon, Rojjares Netthong, Sultana Papadopoulou and Bancha Yingngam (2026). *Dysphagia in Neurodevelopmental and Medical Disorders and Diseases: A Lifespan Approach* (pp. 431-490).

[www.irma-international.org/chapter/formulation-science-in-dysphagia-care/405721](http://www.irma-international.org/chapter/formulation-science-in-dysphagia-care/405721)