

## Chapter 15

# Complementary and Alternative Medicine Use in Hypertension: The Good, the Bad, and the Ugly: Hypertension Treatment From Nature – Myth or Fact?

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### ABSTRACT

*Thirty six percent of people in USA and Canada regularly use complementary and alternative medicine (CAM) for the prevention and treatment of different diseases, including hypertension. Generally, majority of the hypertensive patients do not disclose the use of such remedies, and also health care providers do not usually ask their hypertensive patients if they use CAM. The widespread consumption of CAM in hypertension requires clear understanding of their underlying mechanism of action, efficacy and safety. This chapter will provide a comprehensive list of CAM commonly used by Americans for the prevention and treatment of hypertension as well as their postulated mechanism of action. Modulation of drug metabolizing enzymes and their safety will also be covered along with the clinical consequences, i.e. drug-herb or herb-disease interactions. patients and healthcare providers should also be careful with using CAM therapies, because not only is there minimal evidence that several CAM products work to treat hypertension, but their safety hasn't been well-established.*

## INTRODUCTION

### Definition

Blood pressure (BP) is a measurement of the pressure in the blood vessels, both when the heart contracts (systolic blood pressure, SBP) and when it is filling with blood between beats (diastolic blood pressure, DBP). Hypertension (HTN), or high blood pressure, is defined as SBP of 140 mmHg or above and/or DBP of 90 mmHg or above, or currently taking medication to lower blood pressure (NHLBI, 2015). HTN is a major predictor for coronary heart disease, stroke, and renal failure. Starting at an ideal BP of 115/75, every 20/10 mmHg (systolic/diastolic) increase in BP doubles the risk of cardiovascular diseases. As HTN can be directly linked with more than 360,000 American deaths annually and 17.3 million annual deaths globally, the disease and its associated complications are the most common cause of death in the world (Mozaffarian et al., 2015).

Elevated BP can be classified into three different categories, with ever increasing risks of complications: pre-HTN is systolic blood pressure from 120-139 mmHg or diastolic blood pressure from 80-89 mmHg, Stage I HTN is SBP from 140-159 mmHg or DBP from 90-99 mmHg, and Stage II HTN is SBP  $\geq$  160 mmHg or DBP  $\geq$  100 mmHg (NHLBI, 2015). High BP is the most common reason for American adults to both visit their healthcare providers and to take medications, but only 51.4% of Americans who are being treated for HTN are considered to be controlled, usually to a goal BP of <140/90 mmHg for most patients, including those with diabetes and chronic kidney disease. Current recommended goal BP for patients older than 60 years is <150/90 mmHg, though this is a matter of some debate. Blood pressure goals for the general public and those with comorbid conditions may be revised with future updates to HTN guidelines, as recent evidence has shown that tighter control of BP leads to lower rates of MI, heart failure, stroke, and death. Resistant HTN can be diagnosed when a patient is on optimal doses of 3 classes of anti-HTN medications but their BP remains  $\geq$ 140/90, or if they are using medications from  $\geq$ 4 classes of anti-HTN medications regardless of resulting BP (Group, 2015; James et al., 2014; Mozaffarian et al., 2015).

Uncontrolled BP can lead to various complications that usually include end-organ damage, like left-ventricular hypertrophy (LVH), heart failure, stroke (ischemic and/or hemorrhagic), chronic kidney disease (CKD), and end-stage renal disease (ESRD). When DBP is greater than 120 mmHg, it can lead to many complications, including hypertensive urgency (DBP > 120 with no end-organ damage) or hypertensive emergency (DBP > 120 with acute, ongoing organ damage, usually to the brain, eyes, kidneys, or heart). At the opposite end of the spectrum, when treatment is too effective and brings BP too low (DBP < 55-60 mmHg), a patient may be at increased risk of myocardial infarction or stroke. Therefore, when a patient is being treated for HTN, it is important to monitor their BP closely while initiating treatment, changing doses of medications, or changing treatments (Jan Basile & Michael J Bloch, 2015).

When a patient is diagnosed with pre-HTN or greater, it is usually recommended that lifestyle modifications are either started before or in concert with any pharmacological therapy, as these can have a marked impact on lowering BP. These lifestyle changes include sodium restriction, weight loss, a diet similar to that outlined by DASH (Dietary Approaches to Stop HTN), 30 minutes of exercise most days, moderate alcohol intake, and patient education (Jan Basile & Michael J Bloch, 2015).

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