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Relieving the tension in hypertension: Food–drug interactions and anti-hypertensive mechanisms of food bioactive compounds

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Abstract

Hypertension is a global health problem. Statistics report from the World Health Organization reveals its prevalence in about a quarter of the world global population. Due to the complications associated with hypertension, it is required to be well managed or prevented pharmacologically or non-pharmacologically. Pharmacologically, the major antihypertensive drugs used are centrally acting sympatholytic drugs, diuretics, vasodilators, angiotensin converting enzyme inhibitors, and angiotensin II receptor blockers while non-pharmacological means of management include lifestyle changes, intake of diet or supplements with antihypertensive effects. Interestingly, the use of diet as a complement with drug intake has become very popular due to occurring side effects over time. Recent research efforts have revealed that foods such as fruits and vegetables contain bioactive substances that modulate the activities of macromolecules involved in the development, complications, and management of hypertension.

Practical applications

Recent research efforts have suggested the efficacy of diets rich in fruits and vegetables in the management of hypertension. This review examines some of the mechanisms involved in the dietary management or prevention of hypertension by bioactive compounds found in foods. This review promotes the use of diet in the management of the condition and also suggests that precautions to be taken in the combined use of food and drugs.

KEYWORDS

angiotensin-I converting enzyme, drugs, food, hypertension, vasodilators

1 | INTRODUCTION

Hypertension occurs when there is a pressure exerted by blood on the vessels, thereby causing the systolic or diastolic blood pressure (DBP) to be consistently and abnormally elevated above the normal threshold. Tabassum and Ahmad (2011) defined hypertension as having a systolic blood pressure (SBP) of ≥140 mmHg and a DBP of ≥90 mmHg. Additionally, it is the most important risk factor attributed to coronary heart diseases such as stroke, congestive heart failure, atherosclerosis, infarction, peripheral vascular disease, and overall mortality. There are two main types of hypertension: the first is termed essential hypertension which develops with no evident cause and the second is termed secondary hypertension, which exists due to prior disease conditions such as kidney problem, endocrine disorders, or diabetes (Paxherbal, 2010). The organs that are usually linked to hypertension are the heart, the kidney, vascular

