Chapter 7
Dietary Fibers and Nutraceuticals in Prevention of Hypertension

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ABSTRACT

Hypertension is the major cause of mortality amongst many cardiovascular risk factors causing 7.5 million deaths annually. Macronutrient and micronutrient deficiencies are very common in general population and have broad-ranging physiological effects in-vivo which lessen inflammatory cascades and vascular reactivity. A recent trend is to perform nutritional epidemiological studies linking overall diet pattern to the lifestyle, examining the link between food and nutrients of diet to risk of chronic diseases. This chapter would deal with pharmacological and pathological basis of hypertension, utilization of dietary fibers, functional foods, nutraceuticals for hypertensive populations as well as to those with increased cardiovascular risks.

INTRODUCTION

Cardiovascular diseases (CVD) are the leading cause of death globally accounting for more than 20 million deaths annually. 3.9 million Deaths in Europe and over 1.8 million deaths in the European Union (EU) occur due to (CVD) every year (*European Cardiovascular Disease Statistics*, 2017; EHN - European Heart Network, n.d.). Cardiovascular diseases are a group of disorders of the heart and blood vessels. People who are at high cardiovascular risk due to the presence of risk factors such as hypertension, diabetes, hyperlipidemia or already established disease, need early detection and management using counseling and medicines, as appropriate.

HYPERTENSION

Hypertension is a major risk factor for morbidity and mortality associated with stroke, heart failure and coronary artery disease and chronic kidney disease (CKD) (Mancia, Fagard, Narkiewicz, Redón, Zanchetti, & Böhm, 2013). Hypertension in adults of age 18 years and older is defined as systolic blood pressure (SBP) of 140 mmHg or greater and/or diastolic blood pressure (DBP) of 90 mmHg or greater or any level of blood pressure in patients taking antihypertensive medication (Chobanian, Bakris, Black, Cushman, Green, & Izzo, 2003).

CVD nevertheless remains the main cause of death, especially ischemic heart disease and cerebrovascular disease (CD)(Kearney et al., 2005; Zimmet, Alberti, & Shaw, 2001; Jackson, Lawes, Bennett, Milne, & Rodgers, 2005). Hypertension, was identified in a recent World Health Organization report as among the most important preventable causes of premature death. Atherosclerosis is the basic reason for high blood pressure, in which plaque builds inside the arteries. Several factors which lead to atherosclerosis are faulty food habits, lack of exercise, stress, sedentary lifestyle, etc. (McGill, 1979; He, Merchant, Rimm Rosner, Stampfer, Willett, & Ascherio,

Table 1. Types of hypertension

Category Pressure	Systolic Pressure mm Hg	Diastolic Pressure mm Hg
• Normal	90–119	60-79
• Pre-hypertension	120–139	80–89
• Stage 1	140–159	90–99
• Stage 2	≥160	≥100
• Isolated systolic Hypertension	≥140	<90

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