

Chapter 40

Dietary Fibers and Nutraceuticals in Prevention of Hypertension

John Intru Disouza

Tatyasaheb Kore College of Pharmacy, India

Kiran Shivaji Patil

Tatyasaheb Kore College of Pharmacy, India

Pratik Shailendra Kakade

Institute of Chemical Technology, India

Vandana Bharat Patravale

Institute of Chemical Technology, India

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*

DOI: 10.4018/978-1-6684-3546-5.ch040

Dietary Fibers and Nutraceuticals in Prevention of Hypertension

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).

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

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, 2003; Bernstein, Sun, Hu, Stampfer, Manson, & Willett, 2010). Smokers with obesity live 14 fewer years than nonsmokers with normal weight. Lifestyle-related conditions, such as obesity, hyperlipidemia, type II diabetes, and hypertension, are also widespread and becoming more prevalent globally(Alberti, Eckel, Grundy, Zimmet, Cleeman, & Donato, 2009). The origin of these CVD is multifactorial. The Cardiovascular risk factors (CVRF) are categorized in table 2 (Bertomeu & Castillo-Castillo, 2008; Olalla, Medrano, Sierra, & Almazán, 1999; Anderson, Wilson, Odell, & Kannel, 1991; Jeppesen, Hein, Suadicani, & Gyntelberg, 1998; Lehto, Rönnemaa, Pyörälä, & Laakso, 2000; Vartiainen, Laatikainen, Peltonen, Juolevi, Männistö, Sundvall, ... Puska, 2010).

30 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/dietary-fibers-and-nutraceuticals-in-prevention-of-hypertension/289513

Related Content

Medco: An Emergency Tele-Medicine System for Ambulance

Anurag Anil Saikar, Aditya Badve, Mihir Pradeep Parulekar, Ishan Patil, Sahil Shirish Belsare and Aaradhana Arvind Deshmukh (2020). *Virtual and Mobile Healthcare: Breakthroughs in Research and Practice* (pp. 1004-1026).

www.irma-international.org/chapter/medco/235358

Could Patient Engagement Promote a Health System Free From Malpractice Litigation Risk?

Massimo Miglioretti, Francesca Mariani and Luca Vecchio (2016). *Promoting Patient Engagement and Participation for Effective Healthcare Reform* (pp. 240-264).

www.irma-international.org/chapter/could-patient-engagement-promote-a-health-system-free-from-malpractice-litigation-risk/150355

Flavonoids: Bioactive Compounds With Anti-Cancer Properties

Mona Luciana Glanu, Mariana Panuroiu and Roxana Colette Sandulovici (2022). *Handbook of Research on Natural Products and Their Bioactive Compounds as Cancer Therapeutics* (pp. 297-318).

www.irma-international.org/chapter/flavonoids/299808

Dyscalculia: Difficulties in Making Arithmetical Calculation

Anjana Prusty, Chia Jung Yeh, Rakesh Sengupta and Ashley Miller (2022). *Research Anthology on Pediatric and Adolescent Medicine* (pp. 259-282).

www.irma-international.org/chapter/dyscalculia/298215

A Framework for Designing and Evaluating Internet Interventions to Improve Tinnitus Care

Eldré W. Beukes, Gerhard Andersson, Vinaya Manchaiah, Peter M. Allen and David M. Baguley (2019). *Tele-Audiology and the Optimization of Hearing Healthcare Delivery* (pp. 121-160).

www.irma-international.org/chapter/a-framework-for-designing-and-evaluating-internet-interventions-to-improve-tinnitus-care/220314