

# Preface

In man, the branched chain amino acids (leucine, isoleucine, and valine) are essential amino acids and thus must be obtained from dietary components. The branched chain amino acids are not only necessary for the synthesis of proteins but also have other metabolic functions and roles. For example, over several decades' evidence has supported the notion that branched chain amino acids, particularly leucine, are important in ameliorating or restoring metabolic imbalance. Studies in the 1970s showed that leucine promoted protein synthesis in muscle in vitro. Later, in the 1980s, it was shown that the branched chain amino acids stimulated protein synthesis in vivo. Subsequently, studies showed that branched chain amino acids could potentially be used clinically in ameliorating muscle catabolism. More recently the branched chain amino acids have been added to performance-enhancing supplements. Although this is a simplistic synopsis of historical events, it is now evident that the branched chain amino acids have a variety of functions. In simple terms the knowledge base associated with the branched chain amino acids have now been successfully harvested to enhance human health. Branched chain amino acids, like some other amino acids, have an almost ubiquitous function and are important in maintaining the cellular milieu of virtually every organ in the human body. For example, branched chain amino acids have roles in carbohydrate and lipid metabolism, insulin release and resistance, proteolysis, formation of keto acids, obesity prevention, and cancer. This does not mean to say that branched chain amino acids are the universal panacea. Indeed the administration of high amounts of branched chain amino acids may be toxic. The science of branched chain amino acids is complex and finding all the relevant information in a single source has hitherto been problematic. This is, therefore, addressed in *Branched Chain Amino Acids in Clinical Nutrition*.

The book has seven major Parts in two volumes.

## **Volume I**

Part I: Basic Processes at the Cellular Level

Part II: Inherited Defects in Branched Chain Amino Acid Metabolism

Part III: Experimental Models of Growth and Disease States: Role of Branched Chain Amino Acids

## **Volume II**

Part I: Role of Branched Chain Amino Acids in Healthy Individuals

Part II: Branched Chain Amino Acids: Status in Disease States

Part III: Branched Chain Amino Acids and Liver Diseases

Part IV: Branched Chain Amino Acid Supplementation Studies in Certain Patient Populations

Coverage includes the individual branched chain amino acids, amino acid ratios, essential amino acids, metabolism, amino acids cocktails, aminotransferases, tRNA, PPAR, uncoupling proteins,

insulin and insulin resistance, glucose and glycemic control, the hypothalamus, sirtuin, ammonia, cirrhosis, encephalopathy, apoproteins, maple syrup urine disease and oxidation disorders, mental retardation, fetal growth, skeletal and cardiac muscles, muscular dystrophy, amyotrophic lateral sclerosis, anorexia, obesity and weight loss, bladder carcinogenesis, tolerability, recovery, exercise, functional adaptations, psychomotor performance, whey protein, brain injury, obstructive pulmonary disease, ethanol oxidation, albumin, late evening snacks, organ transplantation, quality of life, and skin and radiotherapy. Finally there is a chapter on web-based material and additional reading.

Contributors are authors of international and national standing, leaders in the field, and trendsetters. Emerging fields of science and important discoveries are also incorporated in *Branched Chain Amino Acids in Clinical Nutrition*.

This book is designed for nutritionists and dietitians, public health scientists, doctors, epidemiologists, health care professionals of various disciplines, policy makers, and marketing and economic strategists. It is designed for teachers and lecturers, undergraduates and graduates, and researchers and professors.

London, UK

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Branched Chain Amino Acids in Clinical Nutrition  
Volume 1

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2015, XXVIII, 270 p. 91 illus., 21 illus. in color.,

Hardcover

ISBN: 978-1-4939-1922-2

A product of Humana Press