Preface

Glutamine was originally considered a nonessential amino acid due the fact that it can be synthesized from glutamate. Glutamine is also the most abundant amino acid and a major contributor to whole body nitrogen metabolism in man. However, over several decades, evidence has supported the notion that glutamine is “conditionally essential” and thus important in human health. For example, glutamine protects the intestinal tract, skeletal muscle, and neuronal tissue against metabolic stress. Some of the earlier studies showed that reduced intracellular glutamine in muscle was associated with loss of lean tissue or wasting. This led to the development of nutritional support regimens in which glutamine was administered by enteral or parental routes. However, this is rather a simplistic notion of glutamine’s role and potential in disease. It is now known that glutamine has an almost ubiquitous function and is important in maintaining the cellular milieu of virtually every organ in the human body. Thus, its supplementation not only modulates skeletal muscle mass in postsurgical stress but also improves lymphocyte count, enhances outcome scores, and ameliorates the peroxidation of lipids as just a few examples. However, more recent studies have suggested that the administration of glutamine conjugated, or co-administered, with substrates provides greater efficacy that glutamine alone. Furthermore the efficacy of conjugated glutamine is enhanced when administered in complex cocktails that may contain other nutraceuticals. The science of glutamine is thus complex, and finding all the relevant information in a single source has hitherto been problematic. This is however addressed in Glutamine in Clinical Nutrition.

It has five major sections:

Section 1: Basic Processes at the Cellular Level and in Animal Models
Section 2: Glutamine Use in Critically Ill Patients and Their Diagnosis
Section 3: Glutamine in Normal Metabolism and Under Surgical Stress
Section 4: Clinical Aspects of Glutamine in the Intestine
Section 5: Clinical Aspects of Glutamine in Certain Patient Populations

Coverage includes glutamine structure and function, amino acid transporters, glutamine transaminases, one-carbon metabolism, uptake and immunomodulation, the pituitary gland, thyroid-stimulating hormone release, the TCA cycle, mammary tissue, cancer cells, metabolic imaging, endotoxemia, metabolic stress, major surgery, intensive care, multiple trauma, sepsis, dipeptides, insulin sensitivity, critically ill children, liver cirrhosis, ammonia, encephalopathy, the glutamine-glutamate-alpha-ketoglutarate axis, glutamine cycling, metabolic syndrome, glucagon-like peptide-1, presurgery, malnutrition, diabetic foot ulcers, epithelial tight junction, colitis, Helicobacter pylori infection,
intestinal hypoxic injury, dipeptides, intestinal microcirculation, manganese toxicity, epilepsy, glutamine synthetase deficiency, plasma antioxidants, HIV, ischemia reperfusion injury, cancer immunosuppression, exercise, cancer cachexia, skeletal muscle, myostatin, and many other areas. Finally there is a chapter on “Web-Based Resources and Suggested Readings.”

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 Glutamine 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, researchers and professors.

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