



# Handbook of Nutraceuticals Volume II: Scale-Up, Processing and Automation

*Yashwant Vishnupant Pathak*

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Due in part to an absence of universally accepted standardization methods, nutraceuticals and functional foods face regulatory ignorance, marketing incompetence and ethical impunity. Even though many researchers believe that there is a connection between nutraceuticals and functional foods and reduced health care expenses as well as disease prevention, the credibility and quality control challenge remains. The industry needs more standardized testing, reliable reproducible clinical studies to prove the efficacies of products in vivo, and in-process controls to maintain universal product quality.

The first volume of the **Handbook of Nutraceuticals** re-defined Nutraceuticals, covering the regulatory aspect as well as insisting on the cGMP's and SOP's for the nutraceutical manufacturing. This second volume focuses on the scale up, processing, and automation of nutraceutical production under cGMP production regulations. It covers:

- Advancements in extraction methods
- Unit operations involved in scaling up and processing
- Rheological and flow properties of products as characterization parameters
- Fortification and value enhancement using nanotechnology
- Green concepts in food industry
- Flavoring of nutraceuticals
- Clinical batch nutraceutical manufacturing
- New technologies to prevent counterfeiting
- Automation in nutraceutical industry

The nutraceutical market is at the crossroads. With a nearly \$200 billion market for nutraceuticals and functional foods by end of 2013, and promising developments in product design and discovery, the industry must be ready for intense scrutiny. The standardization of testing, clinical studies, and adherence to rigorous industry and scientific methods is necessary for the advancement, acceptance, and development of high quality, effective nutraceuticals. With contributions from leading authorities, this book brings together hundreds of years of combined experience to provide guidance on how to increase the quality and credibility of nutraceutical products.

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