VOLUME THREE Second Edition

Handbook of Pharmaceutical Manufacturing Formulations

Liquid Products



SARFARAZ K. NIAZI



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Handbook of Pharmaceutical Manufacturing Formulations, Third Edition Sarfaraz K. Niazi, 2019-12-06 The Handbook of Pharmaceutical Manufacturing Formulations Third Edition Volume Five Over the Counter Products is an authoritative and practical guide to the art and science of formulating drugs for commercial manufacturing With thoroughly revised and expanded content this fifth volume of a six volume set compiles data from FDA and EMA new drug applications patents and patent applications and other sources of generic and proprietary formulations including author s own experience to cover the broad spectrum of cGMP formulations and issues in using these formulations in a commercial setting A must have collection for pharmaceutical manufacturers educational institutions and regulatory authorities this is an excellent platform for drug companies to benchmark their products and for generic companies to formulate drugs coming off patent Features Largest source of authoritative and practical formulations cGMP compliance guidance and self audit suggestions Differs from other publications on formulation science in that it focuses on readily scalable commercial formulations that can be adopted for cGMP manufacturing Tackles common difficulties in formulating drugs and presents details on stability testing bioequivalence testing and full compliance with drug product safety elements Written by a well recognized authority on drug and dosage form development including biological drugs and alternative medicines Handbook of Pharmaceutical Manufacturing Formulations Sarfaraz K. Niazi, 2016-04-19 Over the Counter products comprise a special category of healthcare products While these formulations have much in common with their prescription counterparts they are presented in this series separately because of their development approach taken labeling considerations required and support available from suppliers of ingredients in designing Handbook of Pharmaceutical Manufacturing Formulations Safaraz K. Niazi, 2016-04-19 No other area of regulatory compliance receives more attention and scrutiny by regulatory authorities than the regulation of sterile products for obvious reasons With the increasing number of potent products particularly the new line of small protein products joining the long list of proven sterile products the technology of manufacturing ster Handbook of Bioequivalence Testing, Second Edition Sarfaraz K. Niazi, 2014-10-29 As the generic pharmaceutical industry continues to grow and thrive so does the need to conduct adequate efficient bioequivalence studies In recent years there have been significant changes to the statistical models for evaluating bioequivalence In addition advances in the analytical technology used to detect drug and metabolite levels have made bioequivalence testing more complex The second edition of Handbook of Bioequivalence Testing has been completely updated to include the most current information available including new findings in drug delivery and dosage form design and revised worldwide regulatory requirements New topics include A historical perspective on generic pharmaceuticals New guidelines governing submissions related to bioequivalency studies along with the rapeutic code classifications Models of noninferiority Biosimilarity of large molecule drugs

Bioequivalence of complementary and alternate medicines Bioequivalence of biosimilar therapeutic proteins and monoclonal antibodies New FDA guidelines for bioanalytical method validation Outsourcing and monitoring of bioequivalence studies The cost of generic drugs is rising much faster than in the past partly because of the increased costs required for approval including those for bioequivalence testing There is a dire need to re examine the science behind this type of testing to reduce the burden of development costs allowing companies to develop generic drugs faster and at a lower expense The final chapter explores the future of bioequivalence testing and proposes radical changes in the process of biowaivers It suggests how the cost of demonstrating bioequivalence can be reduced through intensive analytical investigation and proposes that regulatory agencies reduce the need for bioequivalence studies in humans Backed by science and updated with the latest research this book is destined to spark continued debate on the efficacy of the current bioequivalence testing paradigm

Handbook of Preformulation Sarfaraz K. Niazi, 2019-03-22 Preformulation studies are the physical chemical and biological studies needed to characterize a drug substance for enabling the proper design of a drug product whereas the effectiveness of a drug product is determined during the formulation studies phase Though the two disciplines overlap in practice each is a significantly distinct phase of new drug development Entirely focused on preformulation principles this fully revised and updated Handbook of Preformulation Chemical Biological and Botanical Drugs Second Edition provides detailed descriptions of preformulation methodologies gives a state of the art description of each technique and lists the currently available tools useful in providing a comprehensive characterization of a new drug entity Features Addresses the preformulation studies of three different types of new active entities chemical biological and botanical which is the latest established class of active ingredient classified by the FDA Illustrates the activities comprised in preformulation studies and establishes a method of tasking for drug development projects Includes extensive flow charts for characterization decision making Gives extensive theoretical treatment of principles important for testing dissolution solubility stability and solid state characterization Includes over 50% new material Biosimilarity Sarfaraz K. Niazi, 2018-10-03 Summary The focus of this book is on how the U S FDA will approve biosimilar drugs as learned from recent approvals by the FDA Understanding the limitations of the statutory limits and non inferiority testing are presented as tools to obviate patient trials and minimize testing of immunogenicity An in depth scientific mathematical and statistical view of the tools required to establish biosimilarity of biological drugs of different complexity a must for every developer of biosimilars Features First comprehensive analysis based on new guidelines and approval packages of several biosimilars Presents the first approach to challenge FDA in reducing or eliminating any testing in patients Provides a comprehensive understanding of the U S statutory requirements vis a vis the regulatory guidelines Provides model CQA and Analytical Similarity testing protocols for cytokines and monoclonal antibodies Allow creation of a fast to market pathway to develop biosimilars **Fundamentals of** Modern Bioprocessing Sarfaraz K. Niazi, Justin L. Brown, 2017-07-27 Biological drug and vaccine manufacturing has

quickly become one of the highest value fields of bioprocess engineering and many bioprocess engineers are now finding job opportunities that have traditionally gone to chemical engineers Fundamentals of Modern Bioprocessing addresses this growing demand Written by experts well established in the field this book connects the principles and applications of bioprocessing engineering to healthcare product manufacturing and expands on areas of opportunity for qualified bioprocess engineers and students The book is divided into two sections the first half centers on the engineering fundamentals of bioprocessing while the second half serves as a handbook offering advice and practical applications Focused on the fundamental principles at the core of this discipline this work outlines every facet of design component selection and regulatory concerns It discusses the purpose of bioprocessing to produce products suitable for human use describes the manufacturing technologies related to bioprocessing and explores the rapid expansion of bioprocess engineering applications relevant to health care product manufacturing It also considers the future of bioprocessing the use of disposable components which is the fastest growing area in the field of bioprocessing to replace traditional stainless steel In addition this text Discusses the many types of genetically modified organisms Outlines laboratory techniques Includes the most recent developments Serves as a reference and contains an extensive bibliography Emphasizes biological manufacturing using recombinant processing which begins with creating a genetically modified organism using recombinant techniques Fundamentals of Modern Bioprocessing outlines both the principles and applications of bioprocessing engineering related to healthcare product manufacturing It lays out the basic concepts definitions methods and applications of bioprocessing A single volume comprehensive reference developed to meet the needs of students with a bioprocessing background it can also be used as a source for professionals in the field Biosimilars and Interchangeable Biologics Sarfaraz K. Niazi, 2016-01-05 What s the Deal with Biosimilars Biosimilars are gaining momentum as new protein therapeutic candidates that can help fill a vital need in the healthcare industry The biological drugs are produced by recombinant DNA technology that allows for large scale production and an overall reduction time in costs and development Part of a two volume set that covers varying aspects of biosimilars Biosimilars and Interchangeable Biologics Tactical Elements explores the development and manufacturing of biosimilars and targets challenges surrounding the creation of these products This includes manufacturing production costs and intellectual property barriers particularly in regulated markets regulatory agencies are still in the process of developing guidelines It addresses the complexity of biological drugs and it discusses specific structural elements vital to the functionality immunogenicity and safety of biosimilar products Of specific interest to practitioners researchers and scientists in the biopharmaceutical industry this volume provides an overall understanding of the hurdles difficulties and practicalities of developing a strong plan It introduces a step by step approach for creating a strategy that helps develop and manufacture a biosimilar product while reducing overall production costs and meeting the requirements of biosimilarity based on analytical and functional pharmacokinetic pharmacodynamic where applicable and nonclinical

toxicology or toxicokinetic similarity where appropriate while remaining competitive in the market Handbook of **Pharmaceutical Manufacturing Formulations** Sarfaraz K. Niazi,2016-04-19 While liquid drugs do not share the compression problems of solid dosage forms the filling problems of powder dosage forms or the consistency problems of semisolid dosage forms they do have their own set of considerations in the formulation and manufacturing stages Highlights from Liquid Products Volume Three include practical details invo Pharmaceutical Manufacturing Formulations Dr. Priyanka Gupta Manglik, 2024-08-15 This book provides detailed insight into the various aspects of pharmaceutical manufacturing covering formulations process design technology and regulatory requirements essential for professionals in Handbook of Pharmaceutical Manufacturing Formulations, Second Edition Sarfaraz K. the pharma industry Niazi,2009-09-21 The largest category of pharmaceutical formulations comprising almost two thirds of all dosage forms compressed solids present some of the greatest challenges to formulation scientists The first volume Compressed Solid Products tackles these challenges head on Highlights from Compressed Solid Products Volume One include formulations for more than 200 of the most widely used drugs for all types of release profiles offering formulators a rare opportunity to start with an optimal composition the essentials of what you need to be aware of when establishing a manufacturing process based on the formulations presented identification and inclusion of the most popular prescription products a critical list for the selection of products Handbook of Pharmaceutical Granulation Technology Dilip M. Parikh, 2021-05-11 This fully revised edition of Handbook of Pharmaceutical Granulation Technology covers the rapid advances in the science of agglomeration process control process modelling scale up emerging particle engineering technologies along with current regulatory changes presented by some of the prominent scientist and subject matter experts around the globe Learn from more than 50 global subject matter experts who share their years of experience in areas ranging from drug delivery and pharmaceutical technology to advances in nanotechnology Every pharmaceutical scientist should own a copy of this fourth edition resource Key Features Theoretical discussions covering granulation and engineering perspectives Covers new advances in expert systems process modelling and bioavailability Chapters on emerging technologies in particle engineering Updated Current research and developments in granulation technologies American Book Publishing Record, 2005 The British National Bibliography Arthur James Wells, 2009 Handbook of Pharmaceutical Manufacturing Formulations, Second Edition Sarfaraz K. Niazi, 2009-09-21 Providing methodologies that can serve as a reference point for new formulations the second volume covers uncompressed solids which include formulations of powders capsules powders ready for reconstitution and other similar products Highlights from Uncompressed Solid Products Volume Two include the fundamental issues of good manufacturing practices formulations for more than 400 pharmaceutical products including currently approved products and innovative products such as small proteins instantly liquifiable powders and nanoparticles access to US FDA guidelines as well as all major guidelines around the world identification and inclusion of the most often approved capsules

and powders in the US Handbook of Pharmaceutical Wet Granulation Ajit S. Narang, Sherif I.F. Badawy, 2018-08-31 Handbook of Pharmaceutical Wet Granulation Theory and Practice in a Quality by Design Paradigm offers a single and comprehensive reference dedicated to all aspects of pharmaceutical wet granulation taking a holistic approach by combining introductory principles with practical solutions Chapters are written by international experts across industry academic and regulatory settings and cover a wide spectrum of relevant and contemporary wet granulation topics techniques and processes The books focus on process analytical technology quality by design principles granulation equipment modeling scale up control and real time release makes it a timely and valuable resource for all those involved in pharmaceutical wet granulation Discusses fundamentals of theory and current industrial practice in the field of wet granulation including product and process design and role of material properties in wet granulation Examines the modern evolution of wet granulation through current topics such as established and novel process analytical technologies PATs and product development and scale up paradigms Written for scientists working within the pharmaceutical industry as well as academics regulatory officials and equipment vendors who provide PAT tools and granulation equipment Handbook of Validation in Pharmaceutical Processes, Fourth Edition James Agalloco, Phil DeSantis, Anthony Grilli, Anthony Pavell, 2021-10-28 Revised to reflect significant advances in pharmaceutical production and regulatory expectations Handbook of Validation in Pharmaceutical Processes Fourth Edition examines and blueprints every step of the validation process needed to remain compliant and competitive This book blends the use of theoretical knowledge with recent technological advancements to achieve applied practical solutions As the industry's leading source for validation of sterile pharmaceutical processes for more than 10 years this greatly expanded work is a comprehensive analysis of all the fundamental elements of pharmaceutical and bio pharmaceutical production processes Handbook of Validation in Pharmaceutical Processes Fourth Edition is essential for all global health care manufacturers and pharmaceutical industry professionals Key Features Provides an in depth discussion of recent advances in sterilization Identifies obstacles that may be encountered at any stage of the validation program and suggests the newest and most advanced solutions Explores distinctive and specific process steps and identifies critical process control points to reach acceptable results New chapters include disposable systems combination products nano technology rapid microbial methods contamination control in non sterile products liquid chemical sterilization Handbook of Pharmaceutical Manufacturing Formulations Sarfaraz K. Niazi, 2004-04-27 and medical device manufacture The fifth volume in the series this book covers over the counter products which include formulations of products classified by the US FDA under the OTC category Each entry begins with a fully validated scaleable manufacturing formula and a summary of manufacturing process The book provides a detailed discussion on the difficulties encountered in formulating and manufacturing OTC products The section on regulatory and manufacturing guidance deals with the topics of cGMP practices for the OTC drug products formulations of solid oral dosage forms oral solutions and suspensions validation of

Cleaning process in addition to providing quick tips on resolving the common problems in formulating OTC drugs

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