

# SYNTHESIS OF ASPIRIN

## I. OBJECTIVES AND BACKGROUND

You will:

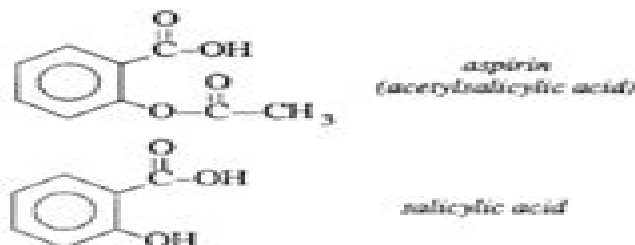
- synthesize acetylsalicylic acid (aspirin) by carrying out a simple organic reaction,
- separate your product from the reaction mixture by vacuum filtration,
- purify your product by recrystallization,
- perform a chemical test to identify the change in functional group from reactant to product, and
- determine the success of your synthesis by calculating the percentage yield of your product.

## INTRODUCTION

Aspirin is one of the most widely used medications in the world. It is employed as an analgesic (pain relief), an anti-pyretic (fever control) and an anti-inflammatory. More recently, studies have indicated that daily intake of small doses of aspirin can lower the risk of heart attack and stroke in high-risk patients.

The history of aspirin and its precursor dates back to ancient times. Documents attributed to Hippocrates, the father of modern medicine, from the 4th century B.C. refer to the alleviation of pain by chewing on the bark of a willow tree or ingesting a powder made from the bark and leaves of the willow. This remedy was passed on from generation to generation.

Fast forward now to the 19th century, where the field of organic chemistry began to experience tremendous growth. By 1838, chemists had managed to isolate, purify and identify the component of willow bark that provided the analgesic benefit. The compound was named salicylic acid, which was based on the genus name of the willow.



# Aspirin Synthesis Lab Manuals

**Mr. Rohit Manglik**



## **Aspirin Synthesis Lab Manuals:**

**Laboratory Manual for Principles of General Chemistry** Jo Allan Beran, 2010-11-01 This new edition of the Beran lab manual emphasizes chemical principles as well as techniques The manual helps students understand the timing and situations for the various techniques The Beran lab manual has long been a market leading lab manual for general chemistry Each experiment is presented with concise objectives a comprehensive list of techniques and detailed lab intros and step by step procedures

**Laboratory Manual of Medicinal Chemistry III** Dr. Niranjana S. Mahajan, Dr. Shrinivas D. Joshi, Dr. T. Prabha, Mr. Shrikrishna S. Maske, We are very pleased to put forth the Laboratory Manual of Medicinal Chemistry III This manual is prepared as per PCI B Pharm course regulations 2014 and is divided into three sections for laboratory techniques determination of oil values and preparations of organic compounds The methods of all the experiments are added from the recent research papers so that the advancement in the methods or apparatus can be addressed This manual is designed for outcome based education and each experiment is arranged in a uniform way such as practical significance practical outcomes PrOs and its mapping with course outcomes theory resources used procedure precautions observations result conclusion references and synopsis questions Each experiment offers an opportunity to perform practical work allowing students to gain proficiency in effectively managing equipment handling glassware chemicals and reagents and writing analytical reports In addition questions are provided at the end of the experiments to enhance students knowledge which will be beneficial for them as they pursue higher studies During the laboratory period you will have to multitask while you are doing experiment It is essential to document properly what you do and what you observe while doing the practical Always plan your work ahead and think about what you are doing why you are doing it what is happening and what you can conclude from your experiment We acknowledge the help and co operation extended by various persons in bringing out this manual We are highly indebted to the authors of various books and articles mentioned in the reference which became a major source of information for writing this manual We also thank the publishers designers and printers who graciously worked hard to publish this manual in time We hope that this manual will assist students in understanding concepts principles and performing procedures We wish you all the best

**Laboratory Manual of Pharmaceutical Organic Chemistry II** Mr. Sushant Sudhir Pande, Dr. Prashant D. Aragade, Dr. Niranjana S. Mahajan, Dr. Rahul P. Umbarkar, 2024-02-16 We are very pleased to put forth the Laboratory Manual of Pharmaceutical Organic Chemistry II This manual is prepared as per PCI B Pharm course regulations 2014 and is divided into three sections for laboratory techniques determination of oil values and preparations of organic compounds The methods of all the experiments are added from the recent research papers so that the advancement in the methods or apparatus can be addressed

**Laboratory Manual for Principles of General Chemistry** J. A. Beran, Mark Lassiter, 2022-08-16 Laboratory Manual for Principles of General Chemistry 11th Edition covers two semesters of a general chemistry laboratory program The material focuses on the lab experiences that reinforce the

concepts that not all experimental conclusions are the same and depend on identifying an appropriate experimental procedure selecting the proper apparatus employing the proper techniques systematically analyzing and interpreting the data and minimizing inherent variables As a result of good data a scientific and analytical conclusion is made which may or may not be right but is certainly consistent with the data Experiments write textbooks textbooks don't write experiments A student's scientific literacy grows when experiences and observations associated with the scientific method are encountered Further experimentation provides additional cause effect observations leading to an even better understanding of the experiment The 11th edition's experiments are informative and challenging while offering a solid foundation for technique safety and experimental procedure The reporting and analysis of the data and the pre and post lab questions focus on the intuitiveness of the experiment The experiments may accompany any general chemistry textbook and are compiled at the beginning of each curricular unit An Additional Notes column is included in each experiment's Report Sheet to provide a space for recording observations and data during the experiment Continued emphasis on handling data is supported by the Data Analysis section

**Laboratory Manual of Pharmaceutical Organic Chemistry I** Mr. Sushant Sudhir Pande, Dr. Prashant D. Aragade, Dr. Saurabh C. Khadse, Dr. Niranjana S. Mahajan, 2024-02-16 We are pleased to put forth the Laboratory Manual of Pharmaceutical Organic Chemistry I This manual prepared according to the PCI B Pharm course regulations 2014 is divided into three sections systematic qualitative analysis preparation of suitable solid derivatives and construction of molecular models The methods of all the experiments are drawn from the latest editions of official books of pharmaceutical organic chemistry and research papers ensuring the inclusion of the latest advancements in methodologies or apparatus This manual is designed for outcome based education Each experiment follows a uniform format with sections for practical significance practical outcomes PrOs mapping with course outcomes theory resources used procedure precautions observations results conclusion references and synopsis questions Each experiment offers an opportunity for students to perform practical work developing proficiency in effectively managing equipment handling glassware chemicals reagents and writing analytical reports In addition the questions at the end of the experiments help to enhance students knowledge benefiting them as they pursue higher studies During the laboratory period you will have to complete multiple tasks while performing the experiment It is essential to document your actions and observations thoroughly as you proceed Always plan your work ahead considering what you are doing why you are doing it what is happening and what conclusions you can draw from your experiment We acknowledge the help and cooperation of various individuals in bringing out this manual We are highly indebted to the authors of the books and articles mentioned in the references which were a major source of information for this manual We also thank the publishers designers and printers who worked hard to publish this manual in a timely manner We hope that this manual will be helpful to students in understanding concepts principles and performing procedures We wish you all the best

Laboratory Manual Jo A. Beran, 1990      **Medicinal Chemistry Laboratory Manual** Charles

Dickson,1998-09-29 Medicinal Chemistry Laboratory Manual Investigations in Biological and Pharmaceutical Chemistry responds to a critical classroom need for material for directed laboratory investigations in biological and pharmaceutical chemistry This manual supplies 55 experiments in 18 major subject areas including carbohydrates lipids and proteins in biochemistry tannins balsams and alkaloids in natural products areas and analgesics steroids and anesthetics in pharmaceutical chemistry

**Laboratory Manual of Medicinal Chemistry I** Dr. Niranjan S. Mahajan,Dr. Pravin N. Khatale ,Dr. Yogesh V. Pore,Dr. Sanjay S Pekamwar,Mr. Sushant Sudhir Pande,2024-02-16 Welcome to the practical world of Medicinal Chemistry I This practical book is designed to complement your theoretical understanding of medicinal chemistry by providing hands on experiences that bridge the gap between concepts learned in the classroom and their real world applications Medicinal chemistry is a dynamic field that plays a crucial role in the design synthesis analysis and optimization of pharmaceutical agents for the treatment of various diseases Scope of the Book The exercises presented in this book cover a range of topics from fundamental principles of drug design to practical techniques in synthesis purification and analysis of bioactive compounds Each experiment is carefully crafted to enhance your skills in medicinal chemistry allowing you to apply theoretical knowledge to practical scenarios Key Features a Clear and concise experimental procedures b Insightful discussions on the rationale behind each experiment c Integration of modern techniques and technologies in medicinal chemistry d Emphasis on safety protocols and ethical considerations in the laboratory Goals The primary goal of this practical book is to foster a deep understanding of medicinal chemistry principles and techniques By engaging in these experiments you will develop the essential skills needed for a successful career in medicinal chemistry whether in academia industry or research Acknowledgments The creation of this practical book would not have been possible without the invaluable contributions of many individuals We extend our sincere gratitude to the authors contributors reviewers and laboratory personnel who dedicated their time and expertise to ensure the quality and relevance of the content How to Use This Manual Before starting each experiment we recommend reading the corresponding theoretical background to reinforce your understanding of the concepts being applied Follow the step by step procedures carefully and don t hesitate to ask questions or seek guidance from your instructors We hope this practical book serves as a valuable resource in your journey through the fascinating world of medicinal chemistry May your experiments be successful and contribute to the advancement of this critical field

*Practical Lab Manual of Pharmaceutical Organic Chemistry - II* Dr. Priyanka Gupta Manglik,2024-08-15 Builds upon Volume I covering advanced organic chemistry experiments with relevance to drug synthesis mechanisms and qualitative quantitative analysis

*Pharmaceutical Chemistry Laboratory Manual* Mr. Rohit Manglik,2024-05-24 Provides lab protocols safety measures and experimental techniques for organic and inorganic pharmaceutical chemistry

**Laboratory Manual to Accompany Chemistry in Context** American Chemical Society,2005-02 The 5th edition Laboratory Manual that accompanies Chemistry in Context is compiled and edited by Gail Steehler Roanoke College The

experiments use microscale equipment wellplates and Beral type pipets as well as common materials Project type and cooperative collaborative laboratory experiments are included Additional experiments are available on the Online Learning Center as is the instructor s guide      Laboratory Manual of Pharmaceutical Chemistry Dr. Remeth J. Dias,Dr. Prashant D. Aragade,Mr. Sushant Sudhir Pande,2023-09-28 We are very pleased to put forth the revised edition of Laboratory Manual of Pharmaceutical chemistry We have incorporated all the suggestions modified it to make it easier student friendly and relevant in terms of achieving curriculum outcome We are very much thankful to all the learned teachers who have given their feedback whole heartedly We have even incorporated the changes in this manual based on the feedback given by the teachers from all the institutes Now we believe that the manual has been fulfilling the aspirations of Pharmacotherapeutics teachers and students too This manual is prepared as per PCI Education Regulations 2020 for Diploma Course in Pharmacy The methods of all the experiments are reviewed and added from the recent research papers so that the advancement in the methods or apparatus can be addressed This manual is designed for outcome based education and each experiment is arranged in a uniform way such as practical significance practical outcomes PrOs and its mapping with course outcomes minimum theoretical background resources used procedure precautions observations result conclusion references and related questions Moreover assessment scheme is also given to help the student and teacher to know what to be assessed Each experiment offers an opportunity to perform practical work allowing students to gain proficiency in effectively managing equipment handling glassware chemicals and reagents and writing analytical reports In addition questions are provided at the end of the experiments to enhance students knowledge which will be beneficial for them as they pursue higher studies We hope that this manual will assist students in understanding concepts principles and performing procedures We wish you all the best      **A Laboratory Manual of General Chemistry** John Henry Secrist,1966      Laboratory Manual for College Chemistry William E. Bull,1980      **Workbook and Lab Manual for Mosby's Pharmacy Technician - E-Book** Elsevier,2015-01-08 With chapter by chapter review and practice this easy to use workbook and lab manual reinforces your understanding of key facts and concepts from Mosby s Pharmacy Technician Principles and Practice 4th Edition Chapter specific lab exercises and skill check off sheets correspond to procedures in the textbook and a wide variety of review questions including fill in the blank matching true false and multiple choice exercises and activities help you study more effectively and learn to apply your knowledge for success on the job Practice with the most important subject areas taught in pharmacy technician programs prepares you for the PTCE and your future job Critical thinking exercises help you apply what you ve learned to real life situations Fill in the blank matching true false and multiple choice questions reinforce chapter material UNIQUE Internet research activities prepare you for research tasks you will encounter on the job Math calculation exercises help you master this difficult area of pharmacology NEW Chapter specific lab exercises give you applicable laboratory experience and practice NEW Skill check off sheets let you track your progress with textbook procedures

**Manual of Blood Platelets: Morphology, Physiology and Pharmacology** Gundu HR Rao, 2018-11-30 Platelets are tiny blood cells that help the body form clots to stop bleeding Antiplatelet medications such as aspirin and clopidogrel are commonly used to thin the blood which limits clotting and reduces the risk of heart attack This book is a comprehensive guide to blood platelets for haematologists Beginning with discussion on platelet structure morphology function and physiology the next chapters cover the role of calcium in platelet activation and calcium modulation by cyclic nucleotides The following sections explain the pharmacology of antiplatelet drugs antiplatelet therapies aspirin resistance and the association of diabetes mellitus with major platelet dysfunction The book concludes with chapters on acute coronary problems interaction between endothelial cells and platelets and blood biocompatibility studies Authored by a Minneapolis based expert in the field the text is further enhanced by clinical photographs diagrams and tables Key points Comprehensive guide to blood platelets for haematologists Extensive coverage of antiplatelet drugs and resistance Recognised author from University of Minnesota Highly illustrated with clinical photographs diagrams and tables

**Chemistry I | AICTE Prescribed Textbook - English** Manisha Agrawal, 2021-11-01 Chemistry I is a compulsory paper for the first year Undergraduate course in Engineering Technology Syllabus of this book is strictly aligned as per model curriculum of AICTE and academic content is amalgamated with the concept of outcome based education Book covers seven topics Atomic and molecular structure Spectroscopic Technique and applications Inter molecular Forces and Potential Energy Surfaces Use of Free Energy in Chemical Equilibrium Periodic Properties Stereo chemistry Organic Reactions and Synthesis of Drug Molecules Each topic is written in easy and lucid manner Every chapter contains a set of exercise at the end of each unit to test student's comprehension Salient Features Content of the book aligned with the mapping of Course Outcomes Programs Outcomes and Unit Outcomes Book Provides lots of recent information interesting facts QR Code for E resources QR Code for use of ICT Projects group discussion etc Students and teacher centric subject materials included in book with balanced and chronological manner Figures tables chemical equations and comparative charts are inserted to improve clarity of the topics Short questions objective questions and long answer exercises are given for practice of students after every chapter Solved and unsolved problems including numerical examples are solved with systematic steps

**Teachers Manual to Accompany Laboratory for General Chemistry** Beran, 1986-05 **Laboratory Manual for Chemistry** Karen Timberlake, 1979 **Laboratory Techniques in Thrombosis — a Manual** J. Jespersen, R.M. Bertina, F. Haverkate, 2013-12-01 The first edition of this manual appeared in 1992 and was entitled ECAT Assay Procedures It was the result of a unique cooperation between experts brought together by the European Concerted Action on Thrombosis and Disabilities ECAT The Concerted Action was at that time under the auspices of the Commission of the European Union The second edition like the first edition deals with diagnostic tests within the field of thrombosis However the second edition has a broader scope because it is no longer limited by the frontiers of ECAT Experts all over the world in and outside ECAT have

contributed to this edition The editors are very grateful for their contributions The need for a new edition is obvious Since 1992 new assays have been introduced for research diagnosis and therapy of thrombosis for other assays improvements have been suggested while a few others became redundant The editors waived the radioimmunoassays of thromboglobulin and platelet factor 4 due to the fact that the kits required for these assays are rarely or no longer available Also the PAI 1 activity assay was waived as it is liable to many inconsistencies and to large variations A list of names and addresses of manufacturers marketing the kits and reagents has been compiled together with a list of the recommended nomenclature of quantities in thrombosis and haemostasis in order to facilitate the use of the updated version These lists have been carefully compiled by Johannes J Sidelmann PhD Department of Clinical Biochemistry in Esbjerg Denmark



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