

Second Edition

# Laboratory Manual Selected Experiments of Pharmaceutical Analysis

is compiled to meet the requirements of pharmacy students under the latest syllabus prescribed by Pharmacy Council of India (PCI). The first edition of this Manual was much appreciated and hence it becomes necessary to further revise it to be more useful. Two chapters based on DSC and HPTLC techniques, along with informative experiments, are included in this edition. A few more experimental exercises are also added in various chapters. The exercises are included as per the new syllabi of BPharmacy and MPharmacy courses.

This manual will be helpful to students as well as the teachers taking the pharmaceutical analysis subject. The manual will be equally useful for the analysts working in the pharmaceutical industry.

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Second  
Edition

Laboratory Manual  
Selected Experiments of

Pharmaceutical Analysis

AA Siddiqui



Second Edition

# Laboratory Manual Selected Experiments of Pharmaceutical Analysis

As per the latest BPharm | MPharm syllabi prescribed by Pharmacy Council of India

**Anees Ahmad Siddiqui**



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CBS Publishers & Distributors Pvt Ltd

# LAB MANUAL

# Selected Experiments of Pharmaceutical Analysis

Second Edition

As per B Pharm/M Pharm syllabus

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New Delhi



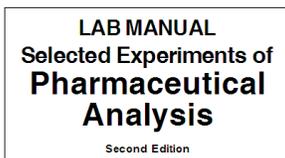
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## Preface to the Second Edition

Pharmaceutical analytical chemistry is a subject of experimental science. Thus, it is important that students of pharmaceutical chemistry do experiments in the laboratory to understand the theories they study in lecture and in their textbook and do the critical evaluation of experimental data. Conclusively, experimentation allows students to develop better selective, sensitive and more accurate methods for qualitative and quantitative analysis of pharmaceutical substances.

The analytical chemistry experiments in this laboratory manual entitled “**Selected Experiments of Pharmaceutical Analysis**” are designed to follow the pharmacy curriculum of undergraduate and postgraduate courses. However, instructors sometimes vary the order of material covered in lecture and, thus, certain experiments may come before the concepts illustrated are covered in lecture or after the material has been covered. Some instructors strongly feel that the lecture should lead the laboratory while other instructors just as strongly believe that the laboratory experiments should lead the lecture, and still a third group feel that they should be done concurrently. While there is no “best” way, it is important that you carefully prepare for each experiment by reading the related text material before coming to the laboratory. In this way, you can maximize the laboratory experience, and can, thus, develop the analytical skill.

Lab experiments are categorized according to type of titration or techniques. Each technique is introduced before experiments. In most of the lab experiments, molar solutions are used as followed in recent edition of Indian Pharmacopoeia. Viva voce type of questions are included in each experiment to prepare the students for practical examination.

In the present edition, some experiments have been added. Two chapters—Differential Scanning Colorimetry and High Performance Thin Layer Chromatography have also been added along with relevant experiments.

The typographic mistakes prevailing in previous edition have been rectified. I acknowledge Dr Sharmistha Mohapatra and Dr Jamshed Haneef and other colleagues for their special assistance in bringing out this second edition.

The author is thankful to Dr Rajiv Tonk and Ravinesh Mishra for their valuable suggestions. The author is thankful to Mr SK Jain CMD, CBS Publishers & Distributors Pvt Ltd, New Delhi, for his cooperation in bringing out this edition.

New Delhi

**Dr Anees A Siddiqui**

## Preface to the First Edition

Pharmaceutical Chemistry is an experimental science. Thus, it is important that students of Pharmaceutical chemistry do experiments in the laboratory to more fully understand that the theories they study in lecture and in their textbook, developed from the critical evaluation of experimental data. The laboratory can also aid the student in the study of the science by clearly illustrating the principles and concepts involved. Finally, laboratory experimentation allows students the opportunity to develop techniques and other manipulative skills that students of science must master.

The experiments in this Laboratory Manual entitled “**Selected Experiments of Pharmaceutical Analysis**” is designed to follow the Pharmacy curriculum. However, instructors will sometimes vary the order of material covered in lecture and thus certain experiments may come before the concepts illustrated are covered in lecture or after the material has been covered. Some instructors strongly feel that the lecture should lead the laboratory while other instructors just as strongly believe that the laboratory experiments should lead the lecture, and still a third group feel that they should be done concurrently. While there is no “best” way, it is important that you carefully prepare for each experiment by reading the related text material before coming to the laboratory. In this way you can maximize the laboratory experience.

Lab. Experiments are categorized according to type of titration or techniques. Each technique is introduced before experiments. In most of the Lab. Experiments, molar solutions are used as followed in recent edition of Indian Pharmacopoeia. Questions are presented throughout each experiment. It is important that you try to answer each question, as it will help you understand the experiment as you do it. Appendices are also included in last for reference at a glance.

I acknowledge **Mr. Vijay Kumar, Director, JASVIC Laboratories, Roorki (UK)** for his special assistance in designing the instrumental experiments.

The author is thankful to Mr Rajiv Tonk and Ravinesh Mishra for their valuable suggestion.

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New Delhi

**Dr Anees A Siddiqui**  
July, 2009

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