FUNDAMENTALS OF **PHARMACOGNOSY** AND **PHYTOTHERAPY**

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SECOND EDITION

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Foreword

Worldwide, drugs derived from organisms continue to be important for the treatment and prevention of many diseases. Pharmacognosy, which is defined in this book as 'the science of biogenic or nature-derived pharmaceuticals and poisons', has been an established basic pharmaceutical science that has been taught in institutions of pharmacy education for about two centuries. This subject area has changed considerably since its initiation, having metamorphosed from a largely descriptive botanical and mycological field in the late 19th and early 20th centuries, to having more of a chemical and biological focus within the last 50 years or so. Today, pharmacognosy embraces the scientific study of compounds from plants, animals and microbes, of both terrestrial and marine origin, and has evolved relatively recently to also include phytotherapy and nutraceuticals. The teaching of pharmacognosy has become even more relevant than previously over the last decade, as a result of the increasing use of herbal remedies (phytomedicines) by the public in Europe, North America and Australasia. When entering a pharmacy today it becomes apparent that considerable shelf space is devoted to a selection of 'herbs', to a degree which would have been quite unimaginable even 20 years ago. If the United States is taken as an example, community pharmacists nowadays have to deal with a rather bewildering array of botanical 'dietary supplements', many of which were introduced soon after the passage of the Dietary Supplement Health and Education Act of 1994. In a major National Health Interview Survey, commissioned by the Centers for Disease Control and Prevention (CDC), it was found that in 2007 about 20% of the US adult population consumed 'nonvitamin, nonmineral natural products', amounting to the sum of $14.8 billion. Therefore, societal interest in pharmacognosy is likely to increase in the future as the biochemical role of phytomedicines, nutraceuticals and natural drugs in general becomes more clearly defined.

This second edition of this volume, *Fundamentals of Pharmacognosy and Phytotherapy*, by Michael Heinrich, Joanne Barnes, Simon Gibbons and Elizabeth Williamson, aims to provide a contemporary and in-depth perspective of natural product drugs used in the practice of pharmacy. The book is organized into two major parts, entitled 'Fundamentals of pharmacognosy' (Part A) and 'Important natural products and phytomedicines used in pharmacy and medicine' (Part B). Part A is divided into five sections, dealing, in turn, with: the history and importance of pharmacognosy and phytotherapy in pharmacy and medicine; relevant principles of botany and ethnobotany; the chemistry of secondary metabolites of organisms pertinent to drug therapy; the characterization and standardization of phytomedicines and nutraceuticals; and the use of medicinal plants in Oriental and South Asian systems of traditional medicine, as well as in Western complementary and alternative medicine. Part B provides coverage of the use of phytomedicines in various therapeutic categories, affecting, respectively: the gastrointestinal and biliary systems; the cardiovascular system; the respiratory system; the central nervous system; infectious diseases; the endocrine system; the reproductive and urinary tracts; the musculoskeletal system; the skin; the eyes; the ear, nose and pharynx; and miscellaneous supportive therapies.

This comprehensive pharmacognosy textbook integrates effectively the traditional elements of pharmacognosy and phytotherapy. The four talented co-authors have been successful in this endeavour in large part because they have contributed their collective technical expertise in several diverse areas, including ethnobotany and ethnopharmacology, classical botanical pharmacognosy, natural product chemistry, phytochemistry, phytotherapy and clinical pharmacy.

This book may be confidently recommended for purchase by undergraduate and professional doctoral students in pharmacy, as well as beginning graduate students in programmes in the pharmaceutical sciences. It will also be of great interest for use in continuing education courses by pharmacists, dentists, nurses and physicians. In addition, all those with a scientific interest in herbalism and complementary and alternative medicine will also find the content of value. The book will also serve as a reliable source of information on natural product drugs for the informed lay reader. It is predicted that *Fundamentals of Pharmacognosy and Phytotherapy* will soon become a classic in its field. This volume will be especially warmly welcomed by educators of future pharmacists and of other healthcare professionals.

Professor A. Douglas Kinghorn,
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Preface

In the last few decades pharmacognosy as an academic discipline, and its application in health care, has changed almost beyond recognition. With the revival of interest in natural drugs, phytotherapy and herbal remedies, new courses are springing up to educate students of pharmacy, medicine, medical herbalism, nursing and related professions. Knowledge about plant-derived products is essential in all areas of health care, not only because these forms of treatment are a popular and widely used healthcare choice (often as over-the-counter products), but also because of the importance of them in many medical traditions. Here, we aim to provide a modern, therapy-oriented perspective, as well as an overview which any reader or educated layperson will find interesting and useful. This book is not a guide to treatment, but a textbook presenting the scientific principles and the evidence, where applicable, underpinning the use of herbal- and other plant-derived medicines.

The content arose in part from the new lecture courses developed by the authors, and is intended to cover all fundamental aspects of pharmacognosy (the study of drugs of natural origin) as well as adding topics on the therapeutic use of such drugs, which is phytotherapy. There is no other book which covers the subject of medicinal plants as an important element of contemporary health care in quite this way and which reflects the current public interest in natural health care. We have combined sections on the scientific study of plant drugs – phytochemistry, ethnopharmacy and botany – with accounts of alternative medicine systems such as medical herbalism, traditional Chinese and Ayurvedic medicine, aromatherapy and others, and a comprehensive section on plant drugs arranged into therapeutic categories. Our purpose is to equip the student with the knowledge to evaluate these therapies, use them when looking to develop drugs and herbal products, and when advising the patient who wishes to try them.

Natural product-derived drugs also include those produced by biotechnology and from animal and microbial sources, but we considered that, as vast and important subjects in their own right, no comprehensive coverage was possible in this text.

Chemical structures are included whenever necessary and appropriate, and we hope to encourage students to appreciate the relevance of the information they impart. In this new edition, we have increased the references and further reading material in each section, so the reader can delve further into the subject, and consult the original work from which our information was taken.

We thank all those who have contributed advice, suggestions and support, including our colleagues, and not forgetting our families of course.

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London (UK)
Joanne Barnes, Auckland (New Zealand)
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