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Joanne Barnes, Linda A. Anderson and J. David Phillipson, **Herbal Medicines**

London: Pharmaceutical Press, 2002. CD-ROM. £75

Requirements: Pentium 233 processor or higher with a CD-ROM drive; Microsoft Windows 98, 2000, XP or NT; Microsoft Internet Explorer 5.5 or higher; 50 MB hard drive space; 64 MB RAM recommended; Super VGA monitor capable of displaying 800 × 600 pixels or higher; Webb access (desirable but not essential – some links will not be available).

Reviewed by Colin W. Wright, University of Bradford, UK

The recently published second edition (2002) of the book Herbal Medicines is already becoming established as an indispensable reference work for pharmacists and other health care professionals. The CD-ROM version contains exactly the same text as the book, but may be preferred by those who find an electronic format more convenient. One advantage of the CD-ROM is that the user-friendly search option allows the reader to look for any word in the text whereas the index in the book cannot be so exhaustive.

Herbal Medicines presents monographs on 148 medicinally important herbs written from a 'modern phytotherapy' perspective. Up-to-date scientific data for each herb is reviewed in order to ascertain whether there is good evidence to support the use of the herb for the stated indications, and to assess its safety as well as the potential for drug–herb interactions. As is apparent from the monographs, for many herbs there is a paucity of good clinical data so that it is difficult to make an objective assessment of their efficacy and/or potential toxicity. However, for some of the more important herbs, such as St John's wort (Hypericum perforatum), a significant amount of data is available both from laboratory and clinical studies and this has been well reviewed and supported by references from the literature (139 specific references are given for St John's wort).

A very valuable section in each of the monographs is the 'Pharmaceutical comment', which highlights important points that are particularly relevant to a health professional when advising on the use of herbal medicines. This is especially useful in the case of the longer monographs (e.g. Garlic, Ginseng, St John's wort and Valerian) when, for example, a pharmacist needs concise information to respond to a request for information.

Although the monographs are likely to be the most-used part of this CD-ROM, the 'Introduction to the Monographs' should not be skipped over as it contains a wealth of background information covering important topics such as the current status of the regulation of herbal medicines and the quality, safety and efficacy of herbal medicines. Various hazards that may arise as a result of the poor quality control of herbal drugs are highlighted and examples are given of important problems that have arisen in recent years, including the nephrotoxicity resulting from the presence of Aristolochia species in Chinese herbal medicines. A series of tables provides information on adverse effects that may be caused by herbal medicines and their constituents, and herbal medicines that should be avoided or used with caution during pregnancy. These tables are complemented by a series of 23 appendices which follow the monographs giving potential herb–drug interactions, lists of herbs with particular therapeutic actions (e.g. diuretic, immunomodulating etc.), and lists of herbs containing particular classes of constituents (e.g. coumarins, volatile oils etc).

The comprehensive information contained in this publication makes it a valuable resource not only for pharmacists and other health professionals, but also for students, particularly those studying pharmacy, and it should also be a core text for students (as well as for practitioners) of herbal medicine.

In summary, the publication of Herbal Medicines as a CD-ROM is a major contribution to this increasingly important area and it is to be hoped that the authors will be able to take advantage of electronic publishing to further enhance this resource. For example, the authors could consider including a list of patent herbal medicines with their ingredients since many herbal products contain several herbs. A glossary defining terms used in herbal medicine may also be useful.

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Fridrun Podczeck, **Particle–Particle Adhesion in Pharmaceutical Powder Handling**

London: Imperial College Press, 1998. 256 pages hardback. £40.
ISBN 1-86094-112-5

Reviewed by Dr Ian M. Grimsey, Lecturer in Pharmaceutical Technology, University of Bradford, UK

Powder science is an area often neglected, even though a significant proportion of dosage forms are either delivered in powder form or have been powders some time in their life cycle. The title of the book is itself slightly misleading as, although the major theme of this book is the adhesion of powders, a much wider field is covered. Physical properties of solid surfaces, such as surface energy, which are considered relevant to the adhesion of particles, and particle friction as well as the determination of fracture mechanics of compacts are other areas that are covered, all subjects that are complementary to understanding bulk powder properties. It is fitting, therefore, that this book should come from an author who has spent many years at one of the major academic centres, who has been consistently researching into pharmaceutical powder behaviour and has recently been appointed to a chair at another.

The book begins by introducing the terms of adhesion and friction and defining their meaning. This is followed by several illustrations of how these factors can and will affect the processing of powders. Brief examples of how the study of these factors can help the investigation of powders systems is followed by a pointed, but well deserved, comment that 'the majority of pharmaceutical references lacks a proper understanding and assessment of particle adhesion'. This lays out the philosophy of the book: a detailed and thorough presentation of the fundamental theories and models describing powder adhesion and friction and its application to typical pharmaceutical applications.

The initial third of the text is devoted to examining and explaining the fundamentals of particle adhesion, beginning with a consideration of particle–particle forces such as capillary and electrical forces and progresses through factors such as surface roughness and work of adhesion. A consideration of models describing adhesion follows, including one, the DMT theory, which the author claims is generally ignored. This can be seen as an indication of the depth and comprehensive nature of this book. As all of the models rely on the knowledge of the true contact area, a consideration of how this factor is measured experimentally is given. The fundamentals of friction are similarly treated although this section is significantly shorter. Again the importance of true area of contact is discussed before models of frictional forces are introduced. These sections are necessarily mathematical as the various theories and models require a certain level of detailed explanation, but this should not be too demanding for anyone who requires a good fundamental understanding of the factors involved and has the background to investigate it.

The second half of the book examines the effect of adhesion and friction in common pharmaceutical powder processes and the measurement of adhesion and frictional forces. Bulk powder properties is the first subject to be treated and the text quickly moves onto the measurement of powder flow and considering such techniques as shear cell measurements, powder avalanching and the critical orifice diameter as well as the more traditionally used techniques such as Carr index and Hausner ratio. The theory of each technique is briefly explained and adequately referenced, and examples of the application of each technique in the measurement of powder systems is given in enough detail for the reader to appreciate the relevance to real procedures. Although less mathematical, these are still dealt with in a theoretical way but again well referenced to applications and examples described in the literature. The consideration of dry powder inhalers is primarily concerned with a discussion of the factors that influence the forces needed to separate drug from carrier which leads appropriately into a consideration of the adhesion of particles during agglomeration in granulated systems and also during tabletting. The main focus of these sections is the link between the adhesion particles and the final strength of either the granule or the compact. The theories involved are again developed and their application demonstrated with detailed references to real and highly pertinent examples.

The main text of the book finishes with an overview of the measuring techniques needed to measure particle adhesion and friction, which covers the range from atomic force microscopy, through centrifugal techniques, to the measurement of the mechanical properties of compacts via beam bending and indentation. In now a familiar style, the theory behind each of the techniques is explained and significant work is referenced. The bibliography takes up the final fifty pages and, as such, is a valuable archive

for the powder scientist covering all the theories, techniques and applications encompassed in this book.

Due to the level of science in this book, I would hesitate to recommend it at undergraduate level, but would make it compulsory reading for postgraduate students who are working in this area. All in all, this publication will be a valuable addition to any scientist who is seriously researching into powder behaviour, and to engineers who are trying to solve these problems and need to understand them from a scientific perspective.