Martindale

The complete drug reference

Thirty-second edition

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Pharmaceutical Press

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Preface

Over the years Martindale has become much more than the name 'pharmacopoeia' implies and so for this new edition the subtitle 'Extra Pharmacopoeia' has been replaced by 'The Complete Drug Reference'. Martindale is now published every three years. It is also available electronically on CD and as Martindale Online.

The aim of Martindale is to provide practising pharmacists and physicians with unbiased evaluated information on drugs and medicines used throughout the world. It therefore has to develop as the body of knowledge on existing drugs grows, new drugs emerge, new preparations are launched, old preparations abandoned, reformulated, or redefined, and the information needs of those practising pharmacy and medicine continue to evolve. We have tried to ensure that the new edition continues to meet these needs.

All the drug monographs from the last edition have been revised, more than 300 having been deleted and more than 250 added, and organised into chapters that reflect the uses of the drugs being described. One of the new features of this edition is the creation of an Interactions section within drug monographs to make the information more accessible both in the book and electronically. A new Bronchodilators chapter draws together drugs that were formerly described in the Antimuscarinics, Prophylactic Anti-asthma Agents, Sympathomimetics, and Xanthines chapters and includes disease treatment reviews for Asthma and for Chronic Obstructive Pulmonary Disease.

The disease treatment reviews, 644 in all and generally located in the chapter introductions, have also been thoroughly revised in order to reflect current trends and provide key references. Cross-references to these reviews appear in the monographs of the drugs cited; the reviews can also be accessed via the general index. It is hoped that these reviews will be of use to readers who want an overview of a particular disease and its drug treatment and will provide a useful starting point for those who want to pursue particular aspects further.

The information on proprietary preparations, an important feature of Martindale, has been updated and presented more concisely.

Martindale is based on published information and more than 30 000 selected references are included. Our aim is to evaluate the literature, covering important studies, guidelines, and useful reviews and placing them in context. Multicentre studies, meta-analyses, and systematic reviews are playing a growing and important role in the study of drug treatment, and their findings and conclusions are considered in many of our chapters. However, there is also a place for the anecdotal report and the small study, and information from such sources is included where appropriate.

The sheer bulk of Martindale was making it rather unwieldy to use and strenuous editorial efforts have been made this time to reduce the size of the book without sacrificing content.

Martindale is not a book of standards. Inclusion of a substance or a preparation is not to be considered as a recommendation for use, nor does it confer any status on the substance or preparation. While considerable efforts have been made to check the material in Martindale, the publisher cannot accept any responsibility for errors and omissions. Also the reader is assumed to possess the necessary knowledge to interpret the information that Martindale provides.

Arrangement

PART 1 (pages 1–1539) contains 4336 monographs arranged in 51 chapters. These chapters generally bring together monographs on drugs and groups of drugs that have similar uses or actions. The introductions of those chapters that describe drugs used in the management of disease contain disease treatment reviews—descriptions of those diseases together with reviews of the choice of treatments.

PART 2 (pages 1541–1646) consists of a series of 827 short monographs arranged in the alphabetical order of their main titles. It includes monographs on some new drugs, on drugs not easily classified, on herbals, and on drugs no longer used clinically but still of interest. There are also monographs on toxic substances, the effects of which may require drug therapy.

PART 3 (pages 1647–2057) contains proprietary preparations from a range of countries. For this edition we have covered Australia, Austria, Belgium, Canada, France, Germany, Ireland, Italy, the Netherlands, Norway, South Africa, Spain, Sweden, Switzerland, UK, and USA. We have also included some proprietary preparations from Japan. The information provided includes the proprietary name, the manufacturer or distributor, the active ingredients with cross-references to the drug monographs, and a summary of the indications as given by the manufacturer.

Indexes

DIRECTORY OF MANUFACTURERS. In Martindale the names of manufacturers and distributors are abbreviated. Their full names are given in this directory together with the full address if it is available. This directory contains some 5400 entries.

GENERAL INDEX. To make fullest use of the contents of Martindale the general index should always be consulted. The exhaustive index includes entries for drugs (approved names, synonyms, and chemical names), preparations, pharmacological and therapeutic groups, and clinical uses (disease treatment reviews). As in previous editions, the index is arranged alphabetically 'word-by-word' rather than 'letter-by-letter'. The index indicates the column in which the relevant entry appears as well as the page.

Nomenclature

MARTINDALE IDENTITY NUMBERS. Each monograph title is followed by an identity number in brackets which consists of a maximum of 6 figures followed by a check character. These numbers are used in our computer manipulation and their purpose is to identify monographs in Martindale.

TITLES AND SYNONYMS. The title of each monograph is in English, with preference being given to British Approved Names (BAN), United States Adopted Names (USAN), and International Nonproprietary Names (INN). These 3 authorities are shown where appropriate. A European Directive (92/27/EEC) requiring the use of Recommended International Nonproprietary Names (rINNs) in the labelling of medicinal products throughout member states of the European Community had not been implemented in the UK at the time of going to press. However, we have acknowledged the move towards replacing BAN by rINN by giving more prominence to INN names. Names given as synonyms include commonly used abbreviated names; Latin versions of *Ph. Eur.* titles; English, American, and Latin synonyms; names used in other languages when these may not be readily identifiable; manufacturers' code numbers; and chemical names. In some approved names it is now general policy to use 'f' for 'ph' in sulpha, 't' for 'th', and 'i' for 'y'; for this reason entries in alphabetical lists and indexes should be sought in alternative spellings if the expected spellings are not found. A table of contracted names for ions and groups used in approved names and titles is given on page xi.

CAS REGISTRY NUMBERS. Chemical Abstracts Service (CAS) registry numbers are provided, where available, for each monograph substance to help readers refer to other information systems. Numbers for various forms of the monograph substance are listed with the variation in form given in parentheses.

Atomic and Molecular Weights

Atomic weights are based on the table of Atomic Weights as revised in 1995 by the Commission on Atomic Weights and Isotopic Abundance, International Union of Pure and Applied Chemistry and based on the ^{12}C scale (see page xii). Molecular weights are given corrected to one place of decimals or to four significant figures for relative weights of less than 100.

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Pharmacopoeias

The selected pharmacopoeias in which each substance appears are listed. Current copies of the pharmacopoeias and their addenda should be consulted for confirmation and for details of standards.

The pharmacopoeias covered include: Austrian, Belgian, *British, British Veterinary,* Chinese, *European, French, German*, International, Italian, *Japanese,* Netherlands, *Polish,* Portuguese, *Swiss,* and *United States* (including the *Formulary*). Those *italicised* in the above list either appeared as new editions or were revised by supplements since the last edition of Martindale, and have been examined for this 32nd edition.

The abbreviations for these pharmacopoeias are included in the list of abbreviations used in Martindale, see page ix which also includes details of the edition and/or supplement(s) consulted.

Several countries are parties to the Convention on the Elaboration of a European Pharmacopoeia. This means that they must adopt the standards of the European Pharmacopoeia. These countries are currently Austria, Belgium, Bosnia-Herzegovina, Croatia, Cyprus, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, the Netherlands, Norway, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, the United Kingdom of Great Britain and Northern Ireland, and the Former Yugoslav Republic of Macedonia. Hence the European Pharmacopoeia is cited in the drug monograph lists of pharmacopoeias rather than these individual national pharmacopoeias.

Official preparations, mainly from the current British and US Pharmacopoeias, are listed at the end of drug monographs.

Pharmaceutical Information

Information on the chemical and physical properties of each substance is given when it is likely to be of use or interest, but only when it is certain that it applies to the form of substance being described in the monograph.

PERCENTAGE STRENGTHS. Unless otherwise stated, solutions of solids in liquids are expressed as percentage w/v, of liquids in liquids as percentage v/v, and of gases in liquids as percentage w/w.

SOLUBILITY. The figures given for solubility in each monograph have generally been obtained from the major pharmacopoeias in which the substance is described, but should not be considered absolute. Unless otherwise indicated in the text, the figures are for solubility at temperatures between 15° and 25°. The information usually relates to w/v solubilities but in some cases is v/v if the monograph substance itself is a liquid. Where solubilities are given in words, the following terms describe the indicated solubility ranges:

solubility	
very soluble	1 in less than 1
freely soluble	1 in 1 to 1 in 10
soluble	1 in 10 to 1 in 30
sparingly soluble	1 in 30 to 1 in 100
slightly soluble	1 in 100 to 1 in 1000
very slightly soluble	1 in 1000 to 1 in 10 000
practically insoluble	1 in more than 10 000

STORAGE. Substances and preparations should be stored under conditions which prevent contamination and diminish deterioration, and the conditions of storage given in the text indicate the precautions recommended in specific cases. Where authorities differ, we have included the most stringent storage requirement. The term 'a cool place' is generally used to describe a place in which the temperature is between 8° and 15°. In general, the storage conditions apply to the monograph substance and not its solutions or preparations.

TEMPERATURE. Temperatures are expressed in degrees Celsius (centigrade) unless otherwise indicated.

Pharmacological and Therapeutic Information

Information on adverse effects, treatment of adverse effects, precautions (including contra-indications), interactions, pharmacokinetics, and uses and administration of each substance is provided by concise statements and these may be elaborated and expanded by referenced reviews and abstracts from papers and other publications. This edition contains about 11 300 such abstracts or reviews based on information in an ever widening range of publications.

Much information has been found in sources such as World Health Organization publications, government reports and legislation, and other official and standard publications. Manufacturers' literature has been considered in the light of other available information.

The risks of administering drugs in pregnancy are well known and the general principle is to give a drug only when the benefit to the individual mother outweighs the risk to the fetus. Where there is a clear risk it is noted under the Precautions or Adverse Effects heading but safety should not be inferred from the absence of a statement for any drug.

Doses

Doses are described under the Uses and Administration heading with as much detail as is necessary and available. Unless otherwise stated the doses represent the average range of quantities which are generally regarded as suitable for adults when administered by mouth. More information on doses and drug administration may be given in the abstracts or reviews. Unless otherwise specified, glucose injection is 5% w/v and sodium chloride injection is 0.9% w/v.

When doses for children are expressed as a range of quantities within specified age limits, the lower dose applies at the lower age and the higher dose at the higher age.

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Martindale staff have been able to call freely on the expertise of other members of the Royal Pharmaceutical Society's staff. In particular the Editor is grateful to JEF Reynolds, DK Mehta and the editorial staff of the British National Formulary, and the staff of the library and information department. Thanks are due to M Davis and EJ Laughton for work on the Preparations database and for other editorial tasks, and also to SL Jefferson and RL Stock who contributed to this edition.

The contents of this 32nd edition were planned, written, checked, indexed, keyed, proofed, and processed by the Martindale staff. The Editor is pleased to acknowledge the skills and commitment of all the Martindale staff and to record her gratitude: to Claire Ryan for clerical assistance and, towards the end of the production cycle, to Evelyn Doh, Pauline Lloyd, and Maria Robinson for a substantial amount of keying; to the Staff Editors Alison Brayfield, Catherine Cadart, Kathleen Eager, Sue Funnell, Prakash Gotecha, Sue Handy, Rhoda Lee, Julie McGlashan, Gail Neathercoat, and Keith Riley; to the Assistant Editors Paul Blake and Anne Parsons; and to the Senior Assistant Editor Sean Sweetman.

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