

Preface

The International Union of Pure and Applied Chemistry (IUPAC) is the global civil organization of chemists. The Union is organized into Divisions, with Division VII being devoted to Chemistry and Human Health. The latter incorporates the Subcommittee for Medicinal Chemistry and Drug Development which has projects in various stages of completion. One of these projects, which is devoted to “Analogue-Based Drug Discovery”, was initiated in 2003.

The goal of the project is to study the role of analogue drugs for medicinal chemistry, and in this respect two interesting points have come to light:

1. Statistically, every second drug is an analogue.
2. The market value of analogue drugs amounts to approximately two-thirds of that for all small-molecule drugs.

Clearly, in order to have reached this level of importance, analogue drugs must have special value.

Today, it is not too difficult to identify analogues among the most frequently prescribed drugs, on the basis of their similarities in structure and biological properties. In the present book, analogue drugs have, for the first time, been collected systematically on the basis of two sources:

- by using actual data from the Anatomical-Therapeutic Chemical (ATC) System of the World Health Organization (WHO); and
- by using the most recently available data of IMS (the former Intercontinental Marketing Services) Health.

In this way, among the Top 500 most frequently used drugs, 67 analogue classes and 306 analogue drugs have been identified.

This book focuses on both structural and pharmacological analogues – that is, those analogues which have similar chemical and biological properties – although some examples are also included where the analogue is derived purely on a similar chemical or a similar biological basis (but not both).

Within the book, it is shown how analogues play an important role in medicinal chemistry and, more importantly, how they optimize drug therapies. Hence, it was for this reason that we sought to select diverse fields of drug research and medicinal chemistry.

The aim of the book was not to provide a comprehensive review, but rather to describe selected analogue classes in a more detailed manner. In support of this aim, we should point out that nine of the authors have played key roles as co-inventors in the discovery of some of the very important drugs detailed in the book.

This book should serve as a useful reference for experts in medicinal chemistry and also for students of this field. Moreover, it will also be of interest to a wide range of scientists, including organic chemists, biochemists, pharmacologists and clinicians, who are interested in drug research.

We extend our sincere thanks to many people involved in the book's preparation. For data collection, we thank our co-workers at Richter Ltd. (Budapest, Hungary): Ildikó Balló, Andrea Donát, Péter Erdélyi, Dr. Tamás Fodor, Sándor Lévai, György Szabó, Dr. Attila Szemző, Katalin Szőke, and Krisztina Vukics.

We are also very much obliged to all project members of the IUPAC Medicinal Chemistry Subcommittee: Prof. Eli Breuer, Prof. Giovanni Gaviraghi, Prof. Per Lindberg, Dr. John Proudfoot, Prof. Jörg Senn-Bilfinger, Prof. Henk Timmerman, and Prof. Camille G. Wermuth, each of whom has contributed chapters. We are also grateful to Prof. Paul W. Erhardt who, as President of the Division of Chemistry and Human Health of the IUPAC, helped in the development of the book, not only in several committee discussions but also as an author. Our thanks are also extended to all co-author experts.

Special thanks are due to Dr. Tom Perun of the IUPAC Medicinal Chemistry Subcommittee, Dr. Hanns Wurziger (Merck KGaA, Darmstadt), Dr. Derek Buckle (DRB Associates), and Dr. Stefan Jaroch (Schering AG, Berlin) for their help in the final preparation and review of the manuscript.

We also received outstanding help from Prof. Sándor Kerpel-Fronius who, as a clinical pharmacologist, helped to create a bridge between medicinal chemistry and clinical pharmacology.

We hope that this book will be a useful reading for all experts participating in drug discovery, both in the industry and in academia.

And last – but not least – we welcome comments from readers, and assure them that these will be taken on board if we are fortunate enough to run to a second edition!

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Budapest and London
May 2005