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Paul Gard, **Human Pharmacology**

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My first questions when I picked up this book were, who is this aimed at and why the ''Human'' prefix? The forward does not answer either question. This book is part of the Lifelines series, which is described as providing concise, engaging and inexpensive texts for life science students, thus answering my first question. The series is recommended as a basis for undergraduate study throughout the academic year, as well as for revision at examination time. Does this book fulfil this objective? There is stiff competition in this market for ''at a glance pharmacology'' or revision notes where a number of inexpensive texts have already established themselves as student favourites. To break into this market a new book has to offer something different. Was this the human dimension? I suppose that the lack of reference throughout the book to animal experimentation or veterinary usage qualifies it's concern with human pharmacology. However, the human aspect does not especially come through from reading the book. Since this series is aimed at the life science undergraduate, it deals with generalisations in the pharmacology field and probably does not have the clinical emphasis required for those studying for careers as health professionals, such as pharmacy, medicine, dentistry and nursing.

The book does fulfill its aim in offering the student reader a concise account of drug actions, uses and side effects. Features that I liked were the brief summary statements throughout the book located in the wide outside margins. Also useful are the bullet point summaries at the end of each chapter. In trying to achieve conciseness there is always the danger of failing to provide sufficient explanation of how drugs work and why they have particular therapeutic application. I believe that knowledge of the underlying mechanism of drug action is vital to the understanding of their pharmacology and therapeutic use. While some of the principles are dealt with adequately in this book, this is not a consistently good feature of the book. I think that some students who were using it to provide a basis for their pharmacological knowledge would find some parts hard going. An example of where there is a sound background is the renin-angiotensin-aldosterone system, where the relevant drug actions and uses are supported by a clear flow diagram of the cascade. Another failing arising from the oversimplification is in the first chapter on the principles of drug actions and effects (what is the difference between actions and effects?). I concede that the principles of drug-receptor interaction are not easy to convey briefly and in a non-technical manner. This attempt by the author to get over pharmacological principles by a straightforward approach is apparent from the start of this book. He uses layman's terms and a jovial style to describe dose-response curves using alcohol as an example – once the maximum effect is reached, you cannot be ''more dead''. This jokey style, however, does not seem to persist throughout the book. It is in the description of dose-response relationships that I considered an important flaw had occurred. The fact that response is related to dose or concentration of drug by means of dose-response curves with dose plotted on arithmetic or logarithmic scale is rightly illustrated. However, the implications that either form is acceptable whereas it is the logarithmic scale that is correct. The reason for this is not explained, but I admit that this would have involved going into receptor theory and the Mass Action equation. The description of competitive antagonism is also confusing especially the calculation of a pA_2 value of the antagonist. I could follow the explanation after a couple of attempts, but whether an undergraduate could understand how to determine a pA_2 value after reading this is

questionable. My main criticism of this section is the emphasis on vertical changes in dose-response curves by an antagonist. It is important to get across to the pharmacology student that dose-response curves are shifted horizontally by competitive antagonists i.e. you need higher doses of the drug (agonist) in the presence of the antagonist to produce the equivalent response in the absence of the antagonist. These changes in the dose-response curves are expressed as dose-ratios, which are used to calculate the pA_2 value.

The second chapter on drugs affecting the peripheral nervous system covers some very important drugs and although this is an area with which I am very familiar, I did find it hard going. It is packed with all the right information but its presentation could have been made easier with a diagram of the autonomic nerve terminal(s) and a table summarising the transmitter, receptor types, responses and uses of the drugs. It also needs to have some subheadings, for example, with drugs acting on the parasympathetic nervous system, it was difficult to find what muscarinic antagonists (e.g. atropine) are used for. The layout of the chapters does improve after this with admirable summary boxes that give plenty of examples of drugs, their uses and proprietary names. Perhaps the author should have gone back and rewritten chapter 2 again!

My next comment concerns the question of whether to use chemical structures of the drugs; in this book there are very few. Presumably this was a conscious decision by the author and/or publishers. In my view, the chemical structure of a drug is vital information since it is the basis of the activity, selectivity, physical properties controlling solubility and therefore its formulation, and its metabolism. As the author states in his foreword, pharmacology is useful for chemists who are engaged in production of new chemical entities as medicines.

There are a number of positive features of this book. It covers the full range of topics I would expect in a concise pharmacology text, the division into chapters being most appropriate. I found the multiple choice questions at the end of each chapter useful and hopefully students will also. Finally, any book is only as good as its index, especially if it is to be used for revision purposes. I tested the index with a few common drug names and disease states and all identified a page where I found reference to what I was searching.