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## Book review

### **Pharmaceutical Experimental Design and Interpretation**

N.A. Armstrong and K.C. James, Taylor and Francis Ltd., London, 1996. pp. 274, ISBN 0-7484-0436-8

The importance of careful experimental design and selection of statistical procedures to be used before experimental work commences cannot be over stated. *Pharmaceutical Experimental Design and Interpretation* is a book which attempts to teach the reader the importance of such ideas by example. It is not a textbook on statistics, but a good basic knowledge of statistics is essential if the full power of the techniques discussed are to be appreciated. Introductory chapters on statistical techniques are provided, though at a level unsuitable for a total beginner; more a quick revision.

The range of techniques covered in this slim volume is extensive. Topics discussed are: multivariate methods, cluster and discrimination analysis, principal component and factor analysis, factorial design of experiments, model-dependent and model-independent optimization and finally experimental designs for mixtures. Each technique is carefully illustrated with a number of examples of direct pharmaceutical relevance. With such a wide range of topics the depth of detail will often be

insufficient for a newcomer to confidently apply them to their own problems directly. The strength of this book, however, lies in the extensive use of real examples and the wide selection of references given. The book teaches by example rather than any attempt to provide a logical approach to experimental design and data analysis. The extensive use of examples means that there is likely to be something of direct interest to all readers.

The quality of some of the figures are disappointing, plots illustrating cubic, hyperbola, parabola, geometric functions etc appear to have been drawn with a straight edge! The plot of  $y = x \cos(2\pi x)$  is wrong and misleading. A plot of water density vs temperature has an ordinate scale which bears no relationship to the actual data. In both cases the authors have picked poor examples to illustrate the points they are trying to make.

While not a reference work, this book cannot but help stimulate research workers in the pharmaceutical and related fields about the importance of experimental design.

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