Allosteric Enzymes: Kinetic Behaviour

by B.I. Kurganov (translated from Russian by R.F. Brookes)

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xviii + 344 pages. £29.95

This book both suffers and gains from changing fashions. In the decade 1965–1975, a large number of papers described various allosteric models. When it became apparent how difficult it was to obtain the kind of data which could distinguish between different mechanisms, interest waned. As a consequence, it is timely to produce a summary of the achievements to date. It is, however, pertinent to ask what aspects of the problem are likely to be of interest and to whom. The biochemist is clearly interested in the different patterns of inhibition and activation which can be observed in metabolic control. Professor Kurganov presents a wide survey of data and systems. Unfortunately not many of these provide data of sufficient accuracy to justify the elaborate kinetic analysis to which they are subjected. Some of the enzymes which have been studied in considerable detail still have not been interpreted unambiguously. In the latter cases only one side of the story – and often an old one – is presented. It would be a pity if the uninitiated reader accepted the survey of alkaline phosphatase and NAD^+-linked dehydrogenases as a complete story. The results on 'half-of-site reactivity' of these enzymes should be used as a warning on how difficult it is to come to the right conclusions, rather than as established facts.

There is a lot of useful information in this book, but in the reviewer's opinion it is marred by two deficiencies. The listing of references is confusing and the literature survey is a very important part of the work. This is, of course, all part of the inadequate technical support publishers give to their authors. Many important topics are mentioned but treated quite superficially, while too much space is given to outdated material and treatments. Statistical analysis and other methods, which would have been very useful in an expanded form, are given summaries which are useless. Only in Ch.5 is time treated as a variable. Kinetic techniques, which really could be used to distinguish between mechanisms, are neglected. The opportunity should have been used to make clear distinctions between cooperativity, allosteric behaviour and substrate-induced conformation changes. The confusion between these three phenomena continuously bedevils the biochemical literature.

Professor Kurganov is clearly one of the leading exponents in the field of allosteric behaviour and many biochemists will be grateful to him for making his wide experience available. No doubt every reviewer would have different opinions on where his main emphasis should have been.

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