Book review

A.P.J. Trinci and J.F. Ryley (Eds), 1984. Mode of action of antifungal agents. Cambridge University Press, Cambridge/London/New York/New Rochelle/Melbourne/Sydney, 405 pp. ISBN 0-521-26171-6. Price £ 42.50.

The book is a volume of the British Mycological Society series and contains the proceedings of a symposium held at the University of Manchester in September 1983. It surveys the cellular and biochemical mechanisms by which antifungal agents and drugs control fungal diseases of animals and plants. The book consists of 17 chapters, each dealing with a specific area and contributed by an author with recognized expertise in the area treated. The first two chapters emphasize the great diversity in pathogenic effects produced by fungi in plants and in man and draw attention to the need for disease control. Chapter 3 stresses the necessity for new toxophores and describes lines along which new potential targets may rationally be found. Screening systems to discover antifungal agents in empirical ways are described in Chapter 4. The remainder of the book deals chiefly with the mode of action of antifungal compounds at the cellular or biochemical level, the mechanisms of fungal resistance to these compounds and the genetics involved. Classes of compounds with a direct site-specific action that are covered in the book include acylalanines, 2-aminopyrimidines, benzimidazoles, dicarboximides and aromatic hydrocarbons, ergosterol biosynthesis inhibitors, 5-fluorocytosine and polyene macrolides. One chapter presents some traditional fungicides, in particular the dithiocarbamates. Two chapters deal with antifungal compounds which may act by affecting morphogenesis of fungi or by indirect action, e.g. by affecting virulence of the pathogen or resistance of the host. Consideration is given in various chapters to the development of resistance to fungicides or antifungal drugs.

Most of the book is of high quality and adequate depth. It offers a vast amount of detailed information on the most important groups of fungicides. It is not a textbook, neither is it meant as a reference for facts about antifungal compounds. Rather, the book provides a detailed overview of the recent literature and discusses directions for future research. In these respects it is a timely publication since 'Systemic fungicides', edited by R.W. Marsh, dates from 1977. The book will be valuable for molecular biologists, plant pathologists and medical mycologists. It may be too advanced for undergraduate students, but will be useful for graduate students in these areas.

A shortcoming of the book is the occasional lack of consistency between chapters. While most chapters extensively treat particular classes of fungicides, the one on traditional fungicides is incomplete and does for instance not include the important phthalimide and copper fungicides. The conclusion of this chapter, that the target of protectant fungicides with the exception of the bisdithiocarbamates is presumably quite specific (p. 150) does not apply to protectant fungicides as a group, and is therefore misleading. This conclusion also contrasts with statements in other parts of the book that most conventional fungicides have a multi-site action (p. 10, 89). As is often the case, the truth is more nuanced and lies between these two extremes. Another inconsistency is that the same class of fungicides is referred to as 2-aminopyrimidines (Ch. 1 and 9) and as hydroxypyrimidines (Ch. 5).

The lay-out of Chapter 15 on N-substituted azole derivatives is unnecessarily different from that of all other chapters of the book. The subject of this chapter relates to that of Chapter 12, which discusses the same type of chemicals, viz. the ergosterol biosynthesis inhibitors. A combination of these two chapters would have been of advantage for the reader. Chapter 16 on polyene macrolides and 5-fluorocytosine has also an exceptional status since it focuses on interactions in combined therapy with these chemicals. The last chapter on the efficacy of antifungal agents entrapped inside liposomes is unique in the sense that it is the only one which

discusses application techniques, which is presumably not the main goal of the book. Table 1.2 wrongly classifies prochloraz as a triazole fungicide instead of an imidazole. Table 1.4 is oversimplified and therefore contains misleading generalizations about surface and systemic fungicides.

The foregoing criticisms are not intended to detract from the scientific value of the book. It is recommended for all scientists interested in the fundamental aspects of antifungal compounds.

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