

Book Reviews

Biodiversity: New Leads for the Pharmaceutical and Agrochemical Industries. Edited by S. K. Wrigley (TerraGen Discovery [UK] Ltd, Slough, Berkshire, UK), M. A. Hayes (GlaxoWellcome Research and Development, Stevenage, Herfordshire, UK), R. Thomas (Biotics Ltd, Guildford, Surrey, UK), E. J. T. Chrystal (AstraZeneca Agrochemicals, Jealotts Hill, Berkshire, UK), and N. Nicholson (SmithKline Beecham, Harlow, Essex, UK). Royal Society of Chemistry, Cambridge, U.K. 2000. 313 pp. 16 × 24 cm. £59.50 (\$129.00). ISBN 0-85404-830-8.

The book is based on the proceedings of a conference and is divided into six sections with 21 chapters covering a broad range of topics relevant to the discovery and study of natural products for the pharmaceutical and agricultural industries.

One section emphasizes the history and importance of natural products to drug discovery. An informative chapter on the National Cancer Institute's (NCI) natural products drug discovery program is presented, including a discussion on anticancer drugs developed from plants, microbes, and marine sources. The NCI's network of collaborations with research organizations and the pharmaceutical industry is described, as are their current and new directions, such as promoting interdisciplinary collaborations between biologists and chemists and working more closely with scientists in biodiversity-rich countries. Another chapter emphasizes the role of natural products as novel prototypes for drug discovery. A chapter on combinatorial chemistry concludes that combinatorial techniques and natural products chemistry should be used synergistically. A review of secondary metabolites and animal health care shows how natural products dominate the antimicrobial, feed-additive antibacterial, anticoccidial, and endectocide market sectors.

Throughout the book, natural products derived from microbes receive the greatest coverage. Three chapters, two devoted to fungi, describe microbial natural products that function as antitumor agents, antibiotics, hypocholesterolemic agents, herbicides, insecticides, fungicides, and immunosuppressants. An informative chapter on signal transduction inhibitors from microorganisms is presented that uses assays based on the inhibition of cytokine production or whole-cell prokaryotic systems. Another chapter describes the isolation of novel inhibitors of lipoprotein-associated phospholipase A₂. A chapter on polyketide biosynthetic pathways describes the reconstitution of a

minimal polyketide synthase complex necessary for metabolite synthesis, relying on the overexpression of individual proteins and spectroscopic techniques. One chapter describes how fused ring aromatic polyketides are formed from different pathways in fungi and streptomycetes. Another chapter describes the photochemically unstable and volatile strobilurin class of fungal metabolites and the agrochemicals modeled after them.

In a section devoted to marine natural products, one chapter discusses the compounds currently under clinical investigation as anticancer agents, the methods used to collect the organisms, and the challenges of finding cost-effective methods of production. Another chapter discusses the dolastatins, potent antineoplastic peptide derivatives that are isolated in exceedingly low yields from the Indian Ocean seahare. Evidence is presented that the compounds arise from cyanobacteria in the seahare's diet. Another chapter discusses the cyclic, copper-selective octapeptides isolated from *Lissoclinum patella*.

Plant natural products are discussed in the NCI's chapter and in an eclectic collection of four chapters. One chapter discusses water-soluble polyhydroxylated alkaloids that inhibit glycosidases, with potential uses as anticancer agents, as antiviral agents, and as immunostimulants, among other uses. Another chapter mentions the use of rainforest ecology to guide plant collections. A chapter on Brazil's rich but threatened biological resources points out that access to Brazil's biodiversity is now primarily through Brazil-based subsidiaries and foreign scientists collaborating with host-country counterparts. Several authors mention the imminent loss of biodiversity through destruction of terrestrial and marine resources, adding a sense of urgency to the search for novel natural products.

While many of the articles are well written and informative, others are less so. While the book does not appear to have an explicit target audience beyond those generally interested in the use of natural products in agriculture and medicine, it can be strongly recommended for academic and industrial libraries.

Todd L. Capson

Smithsonian Tropical Research Institute

Unit 0948

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