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Book review

“Caffeine to Cocaine and back.” Alkaloids—Nature’s Curse or Blessing?

M. Hesse, *Helvetica Chimica Acta*, Zürich, CH (Distributed by: Wiley-VCH, Weinheim, Germany); 1st edition, July 2002; 414 pages, ISBN: 3-9063-9024-1

The alkaloids are a group of secondary metabolites which is second to none in the diversity. Many of them had been known for centuries or even millennia for their often very strong pharmacological actions on the human body. Without knowing anything about the chemical nature of the substances, various alkaloids have been used as drug, medicine or poison. Not surprisingly, the alkaloids have intruiged the very first generation of organic chemists from Wöhler to Berzelius to Liebig. More than 150 years later this heterogeneous assembly of plant chemicals has lost nothing of its appeal to chemists and pharmaceutical scientists alike.

M. Hesse, an acknowledged expert of the field, has added a new contribution to the large number of treatises available on the subject matter. “*Alkaloids—Nature’s curse or blessing?*” is a remarkable book in many respects. At 400 pages, it cannot comprehensively explore a chemical universe of its own, the details of which easily fill tedious multi-volume encyclopedias. Instead it catches and keeps the reader’s attention alive by working out the principles of alkaloid chemistry and biochemistry by focusing on representative or particularly interesting examples.

Alkaloids can be approached from many directions, or looked at from various perspectives, respectively. The phytochemist with a chemical background will probably be more interested in the cornucopia of structural design in which alkaloids are encountered. A phytochemist who has grown from a biological school may focus his view on biosynthetic aspects or the function of alkaloids in the physiology of its parent organism. Structure determination, chemical synthesis in the laboratory, biogenetic synthesis by the living cell are all treated in this appealing book. A great number of alkaloids—mostly from plant sources, but a few from animal species as well—had been known and variously used in human cultures around the globe for their pharmacological actions long before professional chemists in their systematic, scientific way laid their hands

on these intruiging natural compounds. A beautifully illustrated concluding chapter of this book presents an outline of the cultural history of alkaloids and the exploitation of their actions for the benefit as well as the detriment of man. A chapter that deserves individual mentioning here is the fourth one on “artifacts”, i.e. chemical derivatives of alkaloids that are not themselves natural products in the strict sense. A great variety of them are formed in the course of the purification of alkaloids from their parent organisms. A number of common reagents which are used during the extraction of alkaloids are discussed one by one, bringing to the researcher’s awareness this potential experimental pit-fall.

In the preface the author expresses his hope that his book “be accessible not only to chemists but to chemically and biologically interested readers from other fields of science”. This may have been achieved especially in the later chapters which concern themselves with the “biological significance of alkaloids”, “historical aspects of alkaloid chemistry” and “active principles from selected alkaloid sources”. These chapters are accessible to historians of science, physicians, or even scientifically literate lay people, too, but the bulk of the book is hard-core phytochemistry for which a sound chemical background in organic chemistry is needed, at least if one intends to make full use of this book’s potential. While it does have the aesthetic appeal of one, Dr. Hesse’s book is no coffee-table book! It is a high-level academic treatise for the initiated, wrapped in the splendour of a glossy art-exhibition catalogue. The extensive lists of reference that end each chapter make unmistakably clear for which audience this book is primarily designed.

Living up to the highest standards, flaws are hard to find: I could track down but one. On page 186, it says: “Hence, under the right circumstances, (–)-polynneuridine can eventually become (+/–)-polynneuridine or even (–)-polynneuridine.” Well, one of the (–)-polynneuridines should be a (+)-polynneuridine, of course. The careful reader will choose one at will and add the missing strike with his pencil.

The decision whether alkaloids are a curse or a blessing must be left to the reader. The answer will probably depend on the specific compound in question, and even

then on the context of its use. The question of whether Manfred Hesse's book is a curse or a blessing is much easier to answer: Those who are able to appreciate its scientific value will be rewarded by what is probably the most beautiful account of a most fascinating area of phytochemistry. At least I know of no other treatise of this subject that would rival it. This book proves that learned scientific monographs do not by necessity constitute a dull literary genre. *Chemica Helvetica Acta* is

renowned for the extraordinary finesse of their products. To anyone who is familiar with the standard-setting books of this publishing house this luxurious volume cannot be a complete surprise but will nevertheless be a most captivating pleasure.

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