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Book review

N.R. Krishnaswamy, Chemistry of Natural Products. A laboratory handbook, 224pp., Universities Press, June 2012, ISBN: 978-7371-757-4

The book draws on five decades of teaching from his author, and is a collection ofl aboratory experiments that should, ideally, provide a basis for the development of expertise in natural products research, especially as regards isolation. The development of chromatographic techniques has changed dramatically the way natural products are isolated, and the book is a blend of contemporary and old methods. A major merit of the book is, indeed, that it shows that the purification of natural products does not condemn to chromatography, and that alternative, often brighter, strategies are often possible. Natural products research is essentially a transversal discipline, and the experiences described in the book range from isolation to total- and semisynthesis, and even to biotransformation. There is also an interesting appendix for diagnostic color reagents associated to natural product research that includes color reactions off orensic relevance, like the Marquis reagent for morphine and related compounds (codeine, heroine).

This said, the book has several drawbacks. Some are editorial and could have been corrected easily, like the style of the formulas, that only rarely conveys configurational information. Furthermore, the size of the formulas is not homogeneous in the book, and some of them are blatantly wrong like the structure of Taxol on page 17. Also, most sugars are drawn in a chair form different from the usual $^4C_1$, making their identification not immediate. Next, the book is intended mainly for Indian classes, and makes reference exclusively to the Indian supply chain for the botanical plant material. The description of the laboratory experiments is generally clear, but the methodologies involved are in many cases obsolete. Thus, removal of solvents on the steam bath rather than with rotary evaporator is described in many experiences, while the widespread use of benzene will surely raise eyebrows. The author says that "it is not always possible to avoid using toxic chemicals. What is imperative is to learn how to handle them". There are few spectroscopic data on the final compounds or the starting materials and intermediates, and only the NMR spectrum of β-ionone is provided and briefly commented. The synthetic section is focused on phenolics and aromatics. The synthesis of a terthienyl natural product is presented. This encompasses a comparison between the copper bronze promoted oligomerization of 2-iodothiophene with a more modern Kumada coupling, giving a vivid idea of how organic chemistry has evolved over the years.

It would really be too long to highlight all the small details that, apart from the major issues described before, plague this book, and that could have been corrected. On the other hand, the sincere enthusiasm of the author has to be appreciated. In an academic world where students are growingly left to cope for themselves in the lab, the plea of the author to educators for a "continuous supervision of students' benchwork" might sound no less archaic than the evaporation of extracts on the steam bath described in many experiences. In this context, while not replacing a dedicated instructor, the book might nevertheless be a good source ofi deas for young investigators who have probably never heard about the Lieberman–Bourchard reagent or have no idea how to separate a mixture of triterpenoids, or are surprised by the possibility to extract epigallocatechin gallate from water with ethyl acetate.

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