

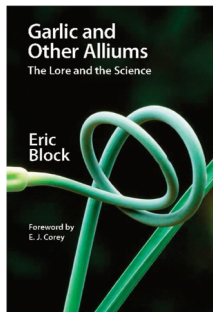
## Review of *Garlic and Other Alliums: The Lore and the Science*

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**Garlic and Other Alliums: The Lore and the Science** by Eric Block. The Royal Society of Chemistry: Cambridge, U.K., 2010. 454 pp. ISBN 978-0854041909 (cloth). \$49.95.

This book brings to mind the poet Horace's formula for successful writing: He wins every hand who mingles profit with pleasure, by delighting and instructing the reader at the same time. Eric Block has certainly mixed the useful and the sweet in his book.



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Other reviewers have pointed out the encyclopedic nature of this book.<sup>1,2</sup> Indeed, it covers every conceivable aspect of garlic, alliums, and the chemistry of their organosulfur and organoselenium compounds. The space allocated for this review is insufficient to list the topics covered in the six chapters in the book. The breadth of subjects, including garlic and alliums in history, literature, cooking, and medicine, make the book accessible to a wide audience, as evidenced by Harold McGee's article about this book and its author in the food and dining section of *The New York Times*.<sup>3</sup> This is an important, comprehensive, scholarly, and readable treatise.

Note that Block's scholarship translates into a festive cornucopia of information, not a pedantic compendium. Whatever you may wish to know about garlic and onions is here. You are not familiar with the decorative garlicks many of us plant in our gardens? See the photographs on page 17. Looking for all of Shakespeare's references to garlic? Begin on page 36. Or, like me, trying to remember that colorful reaction of garlic compounds in Indian dishes that produces a green or blue color that Harold McGee wrote about?<sup>4</sup> Check page 209. Still vague on what happens when you cut open an onion? The chemistry and biochemistry of garlic and onions merits over 150 pages, presented as a history of the research that led to the characterization of garlic oil, allicin, and the onion lachrymatory factor. The book is a paragon of scholarship, in that over 100 of the

400+ pages are devoted to the bibliography, references, tables, and illustrations. The author has done his homework—and obviously enjoyed it!

Block's book merits praise because, in the midst of this miniature encyclopedia, I found chemistry I could use. For example, his reproduction of Hofmann's synthesis of garlic oil, or diallyl sulfide, became the basis for a new experiment in my organic laboratory course this past fall. Students had the opportunity to read the original procedure from the mid-19th century, discover the differences in the language of organic chemistry of that period and the present, and, in most cases, create an aroma that provoked a student to exclaim, "Olive Garden!". In addition, the reaction served as the basis for a lecture course assignment on substitution reactions.

Another example: Block presents Stoll and Seebeck's synthesis of alliin, in which their initial work produced a mixture of diastereomers, exhibiting different properties than the target molecule. The structures of the alliin stereoisomers made an excellent exam question over stereochemistry using sulfur as one of the stereocenters.

This book was a sweet read in that it introduces unfamiliar chemistry that led me to reevaluate familiar chemistry. For example, I studied microwave spectroscopy in a graduate course but have never used the technique nor encountered its applications since. Reading about the characterization of the structure of thioformaldehyde via microwave spectroscopy, and the significance of the work, gave me new appreciation for the technique. (In other words, studying microwave spectroscopy was not, after all, a waste of time.) In the case of the alliin stereochemistry described earlier, I had to research sulfur stereocenters. Most undergraduate texts treat the inversion of nitrogen stereocenters with lone pairs, but do not discuss the room-temperature stability of sulfur stereocenters.

Horace also warned writers that sometimes even Homer nods. Given the detail in which Block discusses synthetic methods, characterization, analytical techniques, and mechanistic studies, the chapters on allium chemistry may require more attention than you wish to give during a first reading. He is, however, considerate of the reader and summarizes the chemistry of Chapter 3 at the beginning of Chapter 4, and provides another summary of allium chemistry at the end of Chapter 4.

I started Block's book as a reviewer and became an admirer. A book that contributes so richly to my teaching and understanding of chemistry is a rare pleasure.

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