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BOOK REVIEW

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Review of: *Quantitation and Mass Spectrometric Data of Drugs and Isotopically Labeled Analogs*

REFERENCE: Liu RH, Wang SM, Canfield DV. Quantitation and mass spectrometric data of drugs and isotopically labeled analogs. Boca Raton, FL: CRC Press, 2009, 264 pp.

This is a book likely destined to be a common bench reference for those conducting GC-MS (electron impact) analyses. Several things about this book are uniquely helpful. The book does not have much text, only two chapters in part 1 of the book, but Chapter 1 presents an excellent discussion of the issues of using isotopically labeled internal standards for quantitation. This discussion includes points that many of us have observed or have given some thought to, but this chapter provides a systematic discussion of how calibration is affected by cross-contribution and theoretical considerations of the selection of calibration mathematics. This chapter also presents a concise and compelling discussion of the impact of ionization efficiencies on deuterated analogs because of sample concentration and chromatographic separation.

The second chapter in part 1 details the construction of the second and third parts of the book. These details include comprehensive tables of derivatization groups, details of the full scan methods for spectra presented, and the methods for the calculations of ion cross-contribution tables presented. Again, this chapter presents concise and compelling discussions about how methods were selected for the subsequent data tables.

Part 2 of the book provides a comprehensive presentation of electron impact (70eV) mass spectra of each of the labeled analogs with each of the applicable derivatives. This comprises the bulk of the pages of the book. The spectra are well presented with matching structures for each analog and analog derivative. All of the spectra are organized into drug classes (stimulants, opioids, hallucinogens, etc.) making locating a desired spectrum easy. This is a unique collection of spectra and an excellent reference. This collection could only be made more useful in an electronically searchable format.

Part 3, I would consider to be the gem of the book. This portion of the book provides tables of the calculated cross-contributions of ion intensity between the compounds and their labeled analogs for each of the relevant derivatives. For each of the compound combinations, these figures are presented for each of the relevant ion pairs. These tables are invaluable for the objective selection of internal standards, but also for the rigorous use of these internal standards in any GC-MS assay that a laboratory is developing.

In short, *Quantitation and Mass Spectrometric Data of Drugs and Isotopically Labeled Analogs* is an excellent bench reference providing unique and important information for developing GC-MS methods. It is clearly written providing concise discussions of topics on quantitative analysis using isotopically labeled internal standards.

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