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Book Review

Protein liquid chromatography

M. Kastner (Ed.), Journal of Chromatography Library Vol. 61, Elsevier, Amsterdam, 2000, xxxii + 941 pp.; ISBN 0-444-50210-6, price NLG 750.00 (Hardbound); ISBN 0-444-50211-4, price NLG 375 (Paperback)

This book deals precisely with what the Editor states on the first line of the Preface, namely with an in depth coverage of both the traditional liquid chromatographic procedures as well as those currently less common, though possessing considerable potential in protein separation. In other words, not only techniques like ion exchange, size exclusion reversed-phase and hydrophobic interaction chromatographic procedures are described in full detail, but also techniques like hydroxyapatite chromatography, immobilized metal ion affinity chromatography, chromatofocusing, dye-ligand affinity chromatography, immobilized artificial membrane chromatography, liquid-liquid partition chromatography and displacement chromatography are dealt with in considerable detail in Part A of the work (these subjects comprise the first 524 pages including a wealth of literature references).

The next 175 pages comprise Part B, called Various target protein classes, and represent selected applications of technologies described in Part A. Admittedly, this part is far from covering all or even the majority of proteins one may be interested in to separate. Chapters 12–15 (Integral membrane proteins, Recombinant proteins, DNA-binding proteins, Lectins and glycoconjugates) represent certainly a rational selection of the protein categories studied most. In particular the chapter dealing with the preparation (isolation) and chromatographic purification of recombinant proteins is worth emphasizing, as this area has not been reviewed to my best knowledge in detail so far. On the other hand, the chapters on Covalent chromatography and Cell affinity chromatography would fit better in part A of this book, where the very techniques are described.

The next part of the book (Part C) is called Miscellaneous chromatographic aspects. Here chapters on Coupling reactions, Immobilization of nucleotides, Miscellaneous biospecific affinity gels, Scale-up of downstream processing, Chromatography on porous matrices, Chromatography using Strep-tag affinity peptides, Buffers and additives, and Chromatography software description can be found.

The information about available liquid chromatography software manufacturers and suppliers (Part D – Supplement) will, I am sure, be highly appreciated by many potential readers.

The fact that in the book all references possess full titles of the quoted papers is to be appreciated as it helps the reader to orient within the plethora of papers dealing with protein separations found in the literature.

The subsections dealing with troubleshooting are extremely valuable and demonstrate clearly that the contributors to this voluminous monograph know from practice what to expect and readily advice the potential reader how to avoid frustrating stages in separations.

Regrettably the last quoted regular papers are from 1997, except a few references from 1998 (and one from 1999) of the authors themselves and some book chapters (and Internet addresses) from 1998.

Some areas (typically peptide mapping) which are extremely difficult to review are quite smarty presented in table forms (see e.g., p. 203 and Table 3.5 but also elsewhere). In my opinion it would be useful to bring about some more detailed information (not only a few sentences, e.g., on p. 154) about peptide mapping and coupling with mass spectrometric methods usable in protein identification and analysis.

It is my personal opinion that the application part (Part B) should have been started with an overview about what strategy one has to use in selecting a separation method for a particular category of proteins. Another slightly problematic part is the index. It would have been of an advantage to have this part split into two, namely

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subject index in which the technicalities would have been summarized and the other index part in which the separated proteins would have been listed. Some entries are puzzling: e.g. ''horse'' on p. 914, which refers to horse cytochrome c on p. 304 (the same holds for the entry ''yeast''). Also it would have been nice to have a chapter on the separation procedures applicable to closely related proteins (protein isoforms) like keratins, collagens, haemoglobins (as a matter of fact none of these can be traced in the subject index). Certainly when dealing with such a richly populated area as proteins, gaps like this (touching other protein categories as well) would surely occur in any book of this size; the content will always reflect the personal attitude of the contributors. Therefore I would like to clearly state that the objections specified above certainly do not devaluate this work scientifically. All in all it is a good book and personally I will be pleased to have it as a reference source on my shelf.

Ivan Mikšik
Academy of Sciences of the Czech Republic,
Institute of Physiology,
Videnska 1083, 142 20
Prague 4, Czech Republic