Bioseparation and Bioprocessing

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Volume II: Processing, Quality and Characterization, Economics, Safety and Hygiene

Edited by
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WILEY-VCH

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Cover illustration: Three-dimensional model of human choriogonadotropin. The model is based on the crystal structure of deglycosylated hCG^9 (PDB code 1hrp). The protein part of the molecule (ribbon) and the four N-linked carbohydrate chains (spheres) are shown on the same scale. The oligosaccharides are attached to Asn52 (top, right) and Asn78 (bottom) of the α-subunit (green), and to Asn13 and 30 (top, left) of the β-subunit (blue). The binding region is indicated in red. It should be noted that the spatial orientation of the carbohydrate chains is arbitrarily set as they are not present in the crystal structure. The carboxy-terminal peptide of the β-subunit (amino acid residues 131–145) is not depicted because its 3D-structure could not be deduced from the crystal [Figure reproduced by courtesy of Prof. Dr. P. D. J. Grootenhuis (Dept. of Computational Medicinal Chemistry, N.V. Organon, Oss)]. See also Chapter 5 of this volume.

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Preface

Biotechnology represents the confluence of several disciplines. The European Federation of Biotechnology has defined biotechnology as an integrated use of biochemistry, microbiology and chemical engineering in order to achieve the technological (industrial) application of the capacities of microbes and cultured cells. Thus, to produce purified biologically active components really depends on the effective separetion process. Within this versatile area of separation it would be incorrect to claim that this book covers the entire field of separation technology comprehensively; it does not; nor is it intended to be used as a textbook for a specific course. This book is intended to project an overview on selected techniques that are actively applied in the biotechnology industries.

The book is organised into three parts containing fifteen chapters contributed by experienced scientists. The first eight chapter in part one gives an overview of various aspects in processing methods that are applied in the industries for the production of bioactive compounds. Quality and characterisation are addressed in chapters 9, 10, 11 and 12. (Part two). Part three consisting of chapters 13, 14, and 15 deals with Economics, Safety and Hygiene.

It is my hope that this volume will bring together accumulated knowledge in a way which will promote the advancement of technology, which will continue to grow and develop on the basis of fascinating discoveries in the control and separation of biomolecules to create technologies that are useful to society.

I gratefully acknowledge the authors for their time and motivation in preparing their contributions, without which this volume would not have been possible. I should be most grateful for any suggestions which could serve to improve future editions of this book.

Finally I would like to thank the staff of Wiley-VCH for their help.

Canterbury, Kent
January 1998

G. Subramanian.

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Part Two: Quality and Characterization