Phospholipid Technology and Applications

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Preface

Phospholipids are an important group of lipids with major areas of interest in biology, biochemistry and medicine, and also in science and technology. It is the latter that are emphasized in this book. The major source of phospholipids is the lecithin recovered during degumming of vegetable oils, particularly soybean oil. This crude material finds uses in its own right, but it can be purified through a series of processes that eventually lead to individual phospholipid classes such as the phosphatidylcholines.

It is widely accepted that oil and water do not mix, but there are several areas in science and technology where these two distinct phases must coexist in stable emulsions. This is achieved by admixture of amphiphilic molecules of which the phospholipids are important natural examples produced commercially at levels in excess of 250,000 tonnes per year. This property has been known for a long time by cooks who, while knowing little about lipid structure or amphiphilic systems, nevertheless recognized the importance of eggs (a rich source of phospholipids) in their recipes.

Today phospholipids find many uses in the food industry and in other industries that exploit the amphiphilic nature of these compounds. Further, there are now important procedures by which the amphiphilicity can be optimized for different uses.

The early chapters in this book are devoted to the more common glycerol-based phospholipids and cover their structure, source, composition, modification by chemical and enzymatic methods, their physical, chemical, and nutritional properties, and their major uses. The final chapter is devoted to another kind of phospholipid – the sphingolipids – in which there is a growing interest.

With its emphasis on science and technology, this book should be of special value to those in the food, cosmetic, and pharmaceutical industries.

I thank all those who have contributed to this book, especially Michael Schneider who collaborated with the editor and publisher in its early stages in developing the topics to be covered and suggested persons, some of whom became part of the writing team.

All the authors join with the editor in thanking Frances Daniel who has used her experience in copy editing to improve the appearance of these eight chapters and make them into a useful book.

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March 2008

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