



Long-chain Omega-3 Specialty Oils



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Preface

Long-chain omega-3 fatty acids have become an important topic both in the scientific community and in our everyday life, and we encounter them in pharmaceutical formulations and health supplements, as well as in numerous food applications outside the area of traditional seafood. For all these uses, omega-3 fatty acids pose a number of technological challenges. Those who have been so lucky as to taste fresh cod or saithe (coley, coalfish) served with its liver, and crisp bread to dip into the fatty juice, will have experienced that there hardly exists a *foie gras* that tastes as well as the fat from absolutely fresh fish liver. However, once the fish oil has left its original state and arrived at its well-known rancid smell and taste, the return journey to pleasant sensory characteristics faces chemical and technological obstacles, and it is only recently that we have come close to reaching the destination.

Today, the future for long-chain omega-3 fatty acids looks very promising. This will be a future that is built on scientific development. This book aims at deepening the understanding of technological aspects of long-chain omega-3 fatty acids by presenting updated scientific information on the selection of raw materials, processing methods, and how to stabilize and concentrate the products. The book also gives an overview of regulatory and marketing issues. The markets are wide – from refined and stabilized oils in food applications to highly concentrated products with well-documented pharmacological effects in pharmaceutical formulations.

The book starts with an introductory chapter giving an overview of the wide range of topics concerning omega-3 fatty acids, including a discussion of how these fatty acids are formed in plants and animals, physiological and medical effects of omega-3 fatty acids, and the importance of chain length. This is followed by chapters discussing the wide variety of fish oil sources, as well as oils obtained from the fermentation of single cell organisms. Separate chapters give information on state-of-art processing of fish oils and methods for making concentrates of omega-3 fatty acids, including a chapter on enzymatic processing and concentration strategies. The next two chapters go into details regarding the stabilization and utilization of omega-3 fatty acids for various food applications. This is followed by a chapter dealing with the challenging aspects of the analysis of omega-3 fatty acids and their decomposition products. The next chapter is dedicated to regulatory issues, and the final chapter gives an up-to-date survey of the various markets for long-chain omega-3 fatty acids.

It has been interesting to note that, reflecting important public awareness and

discussion, the different authors in this book voice varied opinions of the challenges of sustainable fisheries, environmental pollution, and genetic modification issues.

The authors originate from Australia, Canada, the USA, China, Thailand and several European countries. I am grateful to them for accepting the invitation to contribute to the book. Together with the other authors I am grateful to the Oily Press publisher, Peter J. Barnes, and editor, Beverley White, for help and inspiration, and for converting the manuscripts into a handsome volume. We all hope that the book will be useful for our readers, both the newcomer as well as the experienced participant, in the fields of the quality advancement, production and marketing of long-chain omega-3 fatty acids.

Harald Breivik
Neperdo Biomarine,
Porsgrunn, Norway
April 2007

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