

**Zeitschrift:** Mitteilungen aus dem Gebiete der Lebensmitteluntersuchung und Hygiene = Travaux de chimie alimentaire et d'hygiène

**Herausgeber:** Bundesamt für Gesundheit

**Band:** 88 (1997)

**Heft:** 3

**Buchbesprechung:** Bücher = Livres

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## Bücher – Livres

### *Flavor Science Sensible Principles and Techniques*

*Edited by Terry E. Acree and R. Teranishi*

ACS Professional Reference Book

American Chemical Society, Washington, DC 1993. XIV + 351 pp, 16 x 24 cm,  
hardbound, Price: £ 64.00 (ISBN 0-8412-2516-8)

This book presents the state-of-the-art discussions presented by speakers at the Flavor Research Workshop, sponsored by the Flavor Subdivision of the Division of Agricultural and Food Chemistry of the ACS in August 1990 in Washington, DC. Since the first two workshops, held in 1969 and 1979, there has been considerable progress. Only about 500 compounds related to flavors were known in the 1960s. The mechanisms by which we perceive tastes and odors are still not clearly understood. However, this book shows that the «odor unit system» can be used to indicate which compounds are necessary at certain concentrations (thresholds) to reproduce a characteristic aroma. This book highlights the progress made from merely identifying a chromatographic «fingerprint» of many volatile compounds in foods to the stage of defining a combination of compounds which simulates a given flavor. Today, more than 6000 compounds have been isolated and identified. Modern techniques described in this book are able to elucidate which are key precursors and how characteristic aroma constituents are formed and released.

The book begins with the list of contributors. Fourteen experts in various topics have contributed their research results in the 10 chapters of this volume. Chapter 1 deals with bioassays for flavor. The three following chapters are specifically related to taste: i) the common chemical sense in food flavor; ii) the sweet and bitter tastes; iii) the sweetness antagonists. The five last chapters are dedicated to aroma in general: chapter 5 summarises general techniques used for sample preparation, and chapter 6 highlights some aspects of modern instrumental analysis in the flavor industry. Chapter 7 deals with biotechnology as a challenge for the flavor industry. Chapters 8 and 9 are more food-oriented. The former is dedicated to quantitative and sensory aspects of flavor in tomato and other vegetables as well as fruits. The latter is concerned with hydrolytic flavor release in fruits and wines. The last chapter deals with some key flavors induced by thermal reactions of food constituents. The book concludes with a subject index.

This volume provides a broad base in the science and methodology of food flavor. It is of interest to food manufacturing companies, food ingredient and additive suppliers as well as government and academic units involved on laboratory research and development. This book is also appropriate to teachers and students both at undergraduate and graduate levels in food science departments.

J. O. Bosset

## *Aroma Biotechnology*

*Ralf G. Berger*

Springer, Berlin – Heidelberg – New York – Barcelona – Budapest – Hong Kong – London – Milan – Paris – Tokyo 1995. X + 240 p., DM 186, £ 81, FF 701; öS 1450,80, SFr. 175.– (ISBN 3-540-586066-7)

Food scientists, and even food microbiologists, frequently associate microorganisms with substandard quality, spoilage or the presence of off-flavour. However, the application of empirical food biotechnology has resulted in the achievement of high quality drinks or foods, whose typical aroma profiles are highly appreciated by consumers. Some examples of this would be beer, wine, vinegar, bakery goods, cultured milks, cheese, fermented vegetables, meat and fish products. Such historical developments were until recently the roots of modern food technology. Recent progresses in fungal and plant biotechnology, enzyme technology, genetic engineering, bioprocess monitoring and product recovery techniques offer novel approaches and opportunities for the biogenesis of flavour components. Aroma biotechnology opens access to «natural» volatile and non volatile flavours. As «natural» aromas, they are especially valuable for use in foods, cosmetics and related products.

This book is intended to provide guidance in this rapidly growing area of food biotechnology. Instead of searching through a lot of reference sources such as conference proceedings, journals of enzymology, plant science, mycology, chemical engineering, sensory science, molecular biology or highly specialised and dedicated books such as «Food Biotechnology: Microorganisms» (authors: Hui and Khachaturians, edited by VCH Weinheim, 1995), the reader will find a general and valuable overview on this topic. A remarkable effort has been made to stress the most recent developments in this topic, and to quote the most up-to-date literature. Key references are included for each subject area to facilitate access to information published before 1990.

The book is divided into twelve chapters. The author begins with the classification, functions, and bioactivities of aroma compounds. The second chapter is devoted to the aroma aspects of traditional food biotechnologies reconsidered as a starting point for future developments. The next chapter highlights multiples motives for these developments in aroma biotechnology. The fourth chapter covers concisely the laboratory requirements and techniques available. The fifth chapter describes some aroma compounds from microbial de novo synthesis. The sixth chapter gives some examples of biotransformations and bioconversions. Enzyme technology is treated in the next chapter. A chapter on genetically altered catalysts provides a picture of possible aroma applications. Plant catalysts are reviewed in further chapter. The tenth chapter covers the bioprocess technology, and the eleventh depicts possible future industrial applications. The final chapter discusses future trends, and contains nearly a thousand references (grouped by chapter) as well as a detailed index. Every chapter includes numerous tables and figures.

This excellent volume provides a broad base in the science and methodology of aroma biotechnology. As a professional reference book, it targets the following readers: food manufacturing companies, food ingredient and additive suppliers as

well as government and academic units involved in laboratory research and development. This book is also suitable for teachers and students, both undergraduate and graduate, in departments of food science, food technology, food engineering, food chemistry, microbiology, applied molecular genetics, and, of course, biotechnology. By including all the principles of aroma biotechnology under one cover, it also aims to encourage interdisciplinary cross-fertilisation of approaches and methods among different areas of R & D.

J. O. Bosset