



# **HANDBOOK** of Fruit and Vegetable Flavors

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# HANDBOOK OF FRUIT AND VEGETABLE FLAVORS

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Published by John Wiley & Sons, Inc., Hoboken, New Jersey  
Published simultaneously in Canada

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***Library of Congress Cataloging-in-Publication Data:***

Handbook of fruit and vegetable flavors / edited by Y.H. Hui.  
p. cm.

Summary: "Acting as chemical messengers for olfactory cells, food flavor materials are organic compounds that give off a strong, typically pleasant smells. Handbook of Fruit and Vegetable Flavors explores the flavor science and technology of fruits and vegetables, spices, and oils by first introducing specific flavors and their commercialization, then detailing the technical aspects, including biology, biotechnology, chemistry, physiochemistry, processing, analysis, extraction, commodities, and requirements for application as food additives. With chapter authors representing more than ten different countries, this handy reference provides a comprehensive view of this evolving science." – Provided by publisher.

Summary: "This book provides a comprehensive reference on the flavor science and technology of fruits and vegetables, spices, and oils. Beginning with an introduction on the specific flavors and their commercialization, the book then details the technical aspects including biology, biotechnology, chemistry, physiochemistry, processing, analysis, extraction, commodities, and requirements for application as food additives. Regulatory considerations are discussed in relation to sanitation and safety in a flavor manufacturing establishment" – Provided by publisher.

ISBN 978-0-470-22721-3 (hardback)

1. Fruit-Flavor and odor-Handbooks, manuals, etc. 2. Vegetables-Flavor and odor-Handbooks, manuals, etc. 3. Oils and fats-Flavor and odor-Handbooks, manuals, etc. 4. Food-Sensory evaluation-Handbooks, manuals, etc. I. Hui, Y. H. (Yiu H.)

TP440.H357 2010

664'.5-dc22

2010016633

Printed in the United States of America

10 9 8 7 6 5 4 3 2 1

**HANDBOOK OF FRUIT AND  
VEGETABLE FLAVORS**

For the last 50 years, our knowledge of the science and technology of food flavors has increased tremendously. To distribute the information, publishers have released many professional reference books on the subject. In general, most of the books have some discussion on the flavors of fruits and vegetables, though several of them specifically address these two important groups of food commodities. Information on the flavors of fruits and vegetables is essential to the work of government, academia, and industry. This book is an updated reference treatise on the flavors of fruits and vegetables. It includes 55 chapters, with 31 on the flavor of fruits and 24 on that of vegetables, covering the following topics:

- biology, chemistry, and biochemistry
- biotechnology and genetic engineering
- analytical methodology
- processing technology
- fresh and processed commodities
- products derived from processed fruits and vegetables
- regulatory consideration

There are several professional books on the subject matter and the preference for any particular one depends on the needs of the users. Although many topics are included in this volume, we do not claim that the coverage is comprehensive.

This work is the result of the combined efforts of more than 70 individuals from industry, government and academia worldwide. They represent the expertise of professionals from 18 countries including Belgium, Brazil, China, Canada, Croatia, Cuba, France, India, Indonesia, Israel, Italy, Japan, Kuwait, Malaysia, Mexico, Portugal, Spain, Turkey, and the United States. The editorial team consists of 12 established experts in the flavors or processing of fruits and vegetables. Each contributor or editor was responsible for researching and reviewing subjects of immense depth, breadth, and complexity. Care and attention were paramount to ensure technical accuracy for each topic. In sum, this volume is unique in many respects. It is our sincere hope and belief that it will serve as an essential reference on the flavors of major plant foods.

We wish to thank all the contributors for sharing their expertise throughout our journey. We also thank the reviewers for giving their valuable comments leading to

improvements in the contents of each chapter. In addition, we thank members of the production team at John Wiley and Sons for their time, effort, advice, and expertise. All these professionals are the ones who made this book possible. You are the best judge of the quality of their work and we trust that you will benefit from the fruits of their labor.

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## LIST OF ABBREVIATIONS

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AECA	aroma extract concentration analysis
AEDA	aroma extraction dilution analysis
APCI-MS	atmospheric pressure chemical ionization–mass spectrometry
DAD	diode array detection
DSA	descriptive sensory analysis
GC	gas chromatography
GC-FTIR	gas chromatography–Fourier transform infrared spectroscopy
GC-MS	gas chromatography–mass spectrometry
GC-O	gas chromatography–olfactometry
HPLC	high-performance liquid chromatography
HPLC-DAD	high-performance liquid chromatography diode array detection
HPLC-DAD-MS/MS-ESI	high-performance liquid chromatography–diode array detection–mass spectrometry/mass spectrometry–electrospray ionization
HRGC	high-resolution gas chromatography
HRGC-MS	high-resolution gas chromatography–mass spectrometry
HS	headspace
HSE	headspace extraction
HSSE	headspace sorptive extraction
LC	liquid chromatography
LLE	liquid-liquid extraction
OPLC	optimum performance laminar chromatography
PTR-MS	proton transfer reaction mass spectrometry
SBSE	stir bar sorptive extraction
SDE	simultaneous distillation-extraction
SDEV	simultaneous distillation-extraction under vacuum
SFC	supercritical fluid chromatography
SFE	supercritical fluid extraction
SPE	solid phase extraction
SPME	solid phase microextraction
SPME-GC	solid phase microextraction–gas chromatography

SPME-GC-MS	solid phase microextraction–gas chromatography– mass spectrometry
SSF	solid-state fermentation
TD-GC-MS	thermal desorption–gas chromatography–mass spectrometry
TLC	thin-layer chromatography
UAE	ultrasound-assisted extraction
VHS	vacuum headspace

## CONTENTS

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<b>PREFACE</b>	<b>xi</b>
<b>CONTRIBUTORS</b>	<b>xiii</b>
<b>LIST OF ABBREVIATIONS</b>	<b>xix</b>
 <b>SECTION A: FRUIT FLAVORS</b>	 <b>1</b>
 <b>PART I FRUIT FLAVORS: BIOLOGY, CHEMISTRY, AND PHYSIOCHEMISTRY</b>	 <b>1</b>
<b>1. Fruits and Fruit Flavor: Classification and Biological Characterization</b> <i>Yueming Jiang and Jun Song</i>	<b>3</b>
<b>2. Physiology and Biochemistry of Fruit Flavors</b> <i>Sonia Osorio, Cristina Muñoz, and Victoriano Valpuesta</i>	<b>25</b>
<b>3. Sensory Evaluation of Fruit and Vegetable Flavors</b> <i>Sara Bayarri and Elvira Costell</i>	<b>45</b>
<b>4. Fermentation and Fruit Flavor Production</b> <i>Gabriela Alves Macedo, Juliana Alves Macedo, and Luciana Francisco Fleuri</i>	<b>59</b>
<b>5. Environmental Effects on Flavor Changes</b> <i>Clara Pelayo-Zaldívar</i>	<b>73</b>
 <b>PART II FRUIT FLAVORS: BIOTECHNOLOGY</b>	 <b>93</b>
<b>6. Cell Culture for Flavor Production</b> <i>Adriane B.P. Medeiros, Suzan C. Rossi, and Carlos R. Soccol</i>	<b>95</b>
<b>7. Genetic Engineering of Fruit Flavors</b> <i>Asaph Aharoni and Efraim Lewinsohn</i>	<b>101</b>
<b>8. Bioconversion of Flavors</b> <i>P.F.F. Amaral, M.H.M. Rocha-Leão, and M.A.Z. Coelho</i>	<b>115</b>
<b>9. Plant Metabolic Pathways and Flavor Biosynthesis</b> <i>Carlos Sanz and Ana G. Pérez</i>	<b>129</b>

<b>PART III FRUIT FLAVORS: ANALYTIC METHODOLOGY AND CHEMICAL CHARACTERIZATIONS</b>	<b>157</b>
<b>10. History and Principles of Flavor Analysis</b> <i>F. Gutiérrez-Rosales</i>	<b>159</b>
<b>11. Advanced Analytic Methodology</b> <i>Jean-Luc Le Quéré</i>	<b>177</b>
<b>12. Extraction and Distillation</b> <i>Fernando L.P. Pessoa, Marisa F. Mendes, Eduardo M. Queiroz, and Sílvia A.B. Vieira De Melo</i>	<b>195</b>
<b>13. Flavor Extraction: Headspace, SDE, or SFE</b> <i>Gerson L.V. Coelho, Marisa F. Mendes, and Fernando L.P. Pessoa</i>	<b>211</b>
<b>PART IV FLAVORS FOR FRUIT COMMODITIES</b>	<b>229</b>
<b>14. Annona Fruits</b> <i>Jorge A. Pino</i>	<b>231</b>
<b>15. Apple (<i>Malus × domestica</i> Borkh.)</b> <i>Maria Luisa López Fructuoso and Gemma Echeverría Cortada</i>	<b>247</b>
<b>16. Citrus Fruits and Oranges</b> <i>L.M.C. Cabral, A. Bravo, M. Freire JR., H.R. Bizzo, and V.M. Matta</i>	<b>265</b>
<b>17. Flavor in Grapes: Its Characterization and Commercial Applications</b> <i>N.R. Bhat, B.B. Desai, and M.K. Suleiman</i>	<b>279</b>
<b>18. The Aroma of Wine</b> <i>Juan Cacho and Vicente Ferreira</i>	<b>303</b>
<b>19. Mango Flavor</b> <i>O.P. Chauhan, P.S. Raju, and A.S. Bawa</i>	<b>319</b>
<b>20. Passion Fruit</b> <i>Narendra Narain, Nisha Nigam, and Mércia de Sousa Galvão</i>	<b>345</b>
<b>21. Pineapple (<i>Ananas comosus</i> [L.] Merrill) Flavor</b> <i>Marta Montero-Calderón, M. Alejandra Rojas-Graü, and Olga Martín-Belloso</i>	<b>391</b>
<b>22. The Flavor of Plums</b> <i>E. Gómez-Plaza and C. Ledbetter</i>	<b>415</b>
<b>23. Strawberry Flavor</b> <i>Ana G. Pérez and Carlos Sanz</i>	<b>431</b>



<b>24. Temperate Fruit Juice Flavors</b>	<b>451</b>
<i>Terri D. Boylston</i>	
<b>25. Fruits from Central and South America</b>	<b>463</b>
<i>Jiwan S. Sidhu and Yearul Kabir</i>	
<b>PART V    FLAVORS OF SELECTED DRIED FRUITS</b>	<b>485</b>
<b>26. Overview of Flavors and Fruit Dehydration</b>	<b>487</b>
<i>Regina Nabais</i>	
<b>27. Flavors of Dried Apples</b>	<b>515</b>
<i>Elena Venir</i>	
<b>28. Flavors of Dried Apricots</b>	<b>531</b>
<i>Mustafa Z. Özel and Fahrettin Göğüş</i>	
<b>29. Flavors of Dried Bananas</b>	<b>543</b>
<i>Juan Wang, Bing Du, and Gong Ming Yang</i>	
<b>30. Volatile Aroma/Flavor Components of Raisins (Dried Grapes)</b>	<b>549</b>
<i>Ron G. Buttery</i>	
<b>31. Flavors of Dried Pears</b>	<b>557</b>
<i>Draženka Komes and Karin Kovačević Ganić</i>	
<b>SECTION B: VEGETABLE FLAVORS</b>	<b>573</b>
<b>PART VI    VEGETABLE FLAVORS: BIOLOGY, CHEMISTRY, PHYSIOCHEMISTRY, AND BIOTECHNOLOGY</b>	<b>573</b>
<b>32. Chemistry and Biochemistry of Some Vegetable Flavors</b>	<b>575</b>
<i>Qayyum Husain</i>	
<b>33. Traditional and New Analytical Methodology</b>	<b>627</b>
<i>Emira Mehinagic and Jean-Luc Le Quéré</i>	
<b>34. Vegetable Flavors from Cell Culture</b>	<b>663</b>
<i>María Asunción Longo and María Angeles Sanromán</i>	
<b>35. Flavor from Transgenic Vegetables</b>	<b>681</b>
<i>Moustapha Oke and Gopinadhan Paliyath</i>	
<b>36. Genetic Engineering of Fruit Flavors</b>	<b>693</b>
<i>Jingyu Lin, Ningning Wang, Vincent P. Pantalone, and Feng Chen</i>	
<b>37. Metabolic Factory for Flavors in Fruits and Vegetables</b>	<b>705</b>
<i>Yoko Iijima</i>	