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## Contents

Preface xi  
Acknowledgments xiii  
About the Author xv  

### Part I. General 3

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Analytical Matters</td>
<td>5</td>
</tr>
<tr>
<td>2.</td>
<td>Flavors</td>
<td>9</td>
</tr>
<tr>
<td>3.</td>
<td>Spices</td>
<td>11</td>
</tr>
<tr>
<td>4.</td>
<td>Essential Oils</td>
<td>13</td>
</tr>
<tr>
<td>5.</td>
<td>Food Colors</td>
<td>17</td>
</tr>
<tr>
<td>6.</td>
<td>Preparation of Plant Material for Extraction</td>
<td>21</td>
</tr>
<tr>
<td>7.</td>
<td>Methods of Extraction of Essential Oils</td>
<td>25</td>
</tr>
<tr>
<td>8.</td>
<td>Solvent Extraction</td>
<td>29</td>
</tr>
<tr>
<td>9.</td>
<td>Supercritical Fluid Extraction</td>
<td>33</td>
</tr>
<tr>
<td>10.</td>
<td>Homogenization of Extracts</td>
<td>35</td>
</tr>
<tr>
<td>11.</td>
<td>Suspension in Solids</td>
<td>41</td>
</tr>
<tr>
<td>12.</td>
<td>Deterioration During Storage and Processing</td>
<td>45</td>
</tr>
</tbody>
</table>

### Part II. Individual Flavors and Colorants 49

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>13.</td>
<td>Ajwain (Bishop’s Weed)</td>
<td>51</td>
</tr>
<tr>
<td>14.</td>
<td>Allspice (Pimenta)</td>
<td>53</td>
</tr>
<tr>
<td>15.</td>
<td>Anka-Red Fungus</td>
<td>59</td>
</tr>
<tr>
<td>16.</td>
<td>Aniseed</td>
<td>61</td>
</tr>
<tr>
<td>17.</td>
<td>Annatto</td>
<td>63</td>
</tr>
<tr>
<td>18.</td>
<td>Asafoetida</td>
<td>69</td>
</tr>
<tr>
<td>19.</td>
<td>Basil</td>
<td>71</td>
</tr>
<tr>
<td>20.</td>
<td>Bay Leaf (Laurel)</td>
<td>75</td>
</tr>
<tr>
<td>21.</td>
<td>Beet Root</td>
<td>79</td>
</tr>
<tr>
<td>22.</td>
<td>Bergamot Mint</td>
<td>83</td>
</tr>
<tr>
<td>23.</td>
<td>Black Cumin</td>
<td>85</td>
</tr>
<tr>
<td>24.</td>
<td>Black Pepper</td>
<td>87</td>
</tr>
</tbody>
</table>
Chapter 71. Long Pepper 279
Chapter 72. Lovage 283
Chapter 73. Mace 285
Chapter 74. Mandarin 289
Chapter 75. Marigold 293
Chapter 76. Marjoram 299
Chapter 77. Mustard 301
Chapter 78. Nutmeg 307
Chapter 79. Onion 313
Chapter 80. Orange 317
Chapter 81. Oregano 323
Chapter 82. Paprika 325
Chapter 83. Parsley 333
Chapter 84. Peppermint 337
Chapter 85. Red Sandalwood 341
Chapter 86. Rosemary 345
Chapter 87. Saffron 349
Chapter 88. Sage 355
Chapter 89. Savory (Sweet Summer) 359
Chapter 90. Spearmint 361
Chapter 91. Star Anise 365
Chapter 92. Sweet Flag (Calamus) 369
Chapter 93. Tamarind 373
Chapter 94. Tarragon 377
Chapter 95. Tea 379
Chapter 96. Thyme 383
Chapter 97. Tomato 387
Chapter 98. Turmeric 391
Chapter 99. Vanilla 399

Part III. Future Needs 407
Chapter 100. Opportunities in Natural Flavors 409
Chapter 101. Opportunities in Natural Colorants 415

Index of Systematic Biological Names 419
Subject Index 421

Color plates appear between pages 240 and 241
Preface

Ever since man started adding crushed roots, fruits, and leaves to food with a view to improving its organoleptic appeal, the search for more and more diverse flavors had continued. In addition, consumers want their food to be pleasing to the eye. It was soon found that some plant materials gave a good color to the food. One of the distinctive features of humans that differentiates us from other animals is our innovative approach to improve the quality of our food. This enabled the production of such plant material in ground, crushed, distilled, and extracted forms so as to obtain the flavor and color in a convenient and effective form, to be used as an excellent natural additive.

With the development of modern chemistry, synthetic chemical molecules capable of producing delicious flavors and attractive colors started emerging. But as man became more and more conscious of his own physiology and the interference of external molecules, leading to allergy, toxicity, and carcinogenicity, he took a decisive step back to natural substances. After all, the human body is a biological engine and compatibility with bio-derived materials is only natural.

A recent survey (Food Technology, IFT, 2010, April) of the top 10 food trends reports that blending foods and drinks with naturally rich nutrients to be the second most popular trend, and avoidance of chemical additives and artificial colors as the fifth most important trend that Americans seek now.

It was Ernest Guenther who pioneered the production of a six-volume treatise, *The Essential Oils*, which covers the largest group of natural aroma and flavor materials used in food. Even after 60 years, the volumes are widely consulted by food scientists and technologists. Brian M. Lawrence continued the great tradition of reviews in the form of “Progress in Essential Oils,” which appears in the journal *Perfumer and Flavorist*. While the aroma-contributing natural flavors of essential oils are well treated, the same cannot be said regarding nonvolatile natural flavors.

There are many books on spices, but only a few deal with the chemical constituents that are referred to in this book. For spices and other materials, the compilation by Albert Y. Leung and Steven Foster, *Encyclopedia of Common Natural Ingredients*, is indeed a very valuable one. There are some good books and reviews on food colors. Nevertheless, the author believes that there is room for a book that includes all the available natural food flavors and colorants with adequate coverage of plant products, tips on extraction procedures, the chemistry of active principles, guidance on analytical methods, and links to regulatory bodies. This book is designed to assist people associated with food science, technology, and industry to realize the newfound dream
Preface

of consumers for a return to natural substances that can be added to food to improve its appeal.

Almost all the products dealt with in this book may indeed be familiar to ordinary people. However, their scientific significance, methods of production, and recognition in food laws are matters that laypeople will not be fully conversant with and will be a great help to students, researchers, and those in the industry.

The book is divided into three parts. Part I deals with matters connected with analysis, general properties, and techniques. Part II describes the various natural flavors and colorants that are available. Part III covers the future prospects that can be pursued by research workers and manufacturers.

Mathew Attokaran
Acknowledgments

This book has been the fulfillment of one of my cherished dreams. In making available this publication, it is my humble wish that it will serve food scientists, technologists, and industrialists the world over, to move toward flavors and colors of natural origin, a trend that is preferred by today’s consumers. However, this effort of mine would never have seen the light of day had it not been for the benevolent and generous support and encouragement I received from C.J. George, Managing Director of Plant Lipids Limited, a natural flavor and color producing company that is in the forefront of technical excellence and quality management.

Furthermore, I wish to express my indebtedness to all staff members of Plant Lipids for their excellent cooperation throughout this effort. In particular, may I express my gratitude to C.P. Benny, K.V. George, Thomas Mathew, and Binu V. Paul for useful discussions; John Nechupadom for his keen interest; Neelu Thomas for making the figures; Moby Paul for assistance in word processing; and the scientific staff for helpful hints. I must also acknowledge Professor Madhukar Rao for his valuable advice on the usage of language.

I will be failing in my duty if I do not express my gratitude to Salim Pushpanath for the beautiful photographs. (All photographs copyright © Salim Pushpanath.)

I am indeed grateful to the authorities of the Food Chemical Codex (FCC) for allowing me to quote the relevant descriptions of physical specifications of about 40 natural ingredients, most of which are essential oils. They are reprinted with permission, the United States Pharmacopeial Convention, copyright 2009, all rights reserved.

Last but not least, I thank the Institute of Food Technologists, USA, for the encouragement and acceptance of my proposal for publication.

Mathew Attokaran
Mathew Attokaran (formerly A.G. Mathew) was born in Kerala State in India. He has taken his MSc. in Oils, Fats, and Aromatics and Ph.D. in Food Chemistry. He has carried out research in Food Science and Technology for over 28 years in the Central Food Technology Research Institute, Mysore and Regional Research Laboratory (CSIR), Trivandrum, before moving to the industry. He has guided Ph.D. students and published over 200 scientific papers.

Many of his research findings have been successfully developed into viable technologies, which have been effectively utilized by the industry. His team developed the highly successful two-stage process for making spice oleoresin.

Twice he has been the leader of the Indian Delegation for the International Standards Organization (ISO) Committee meetings on Spices and Condiments held in Hungary (1983) and in France (1986). He was the President of Essential Oils Association of India for two terms. He has widely traveled in the United States, Europe, and Asia for visits to research and industry centers as well as for participation in international conferences. He has completed Short-term Missions in three United Nations agencies: the Food and Agricultural Organization of the United Nations, Rome; the United Nations’ Industrial Development Organization, Vienna; and the International Trade Centre, of the UN and WTO, Geneva.

He is happily married and lives with his wife in Cochin, where he continues to work as the Technical Director of Plant Lipids Limited. He has two daughters and five grandchildren. Dr. Attokaran can be reached at info@plantlipids.com.