Flavor Chemistry of Ethnic Foods

Flavor Chemistry of Ethnic Foods

Edited by

Fereidoon Shahidi

*Department of Biochemistry
Memorial University of Newfoundland
St. John's, Newfoundland
A1B 3X9 Canada*

Chi-Tang Ho

*Department of Food Science
Cook College
Rutgers, The State University of New Jersey
P.O. Box 231
New Brunswick, NJ 08903-0231*

Springer Science+Business Media, LLC

Library of Congress Cataloging-in-Publication Data

Flavor chemistry of ethnic foods / [edited by] Fereidoon Shahidi, Chi-Tang Ho.

p. cm.

"Proceedings of a meeting held during the Fifth Chemical Congress of North America, held November 11-15, 1997, in Cancun, Mexico"--

-T.p. verso.

Includes bibliographical references and index.

ISBN 978-1-4613-7166-3 ISBN 978-1-4615-4783-9 (eBook)

DOI 10.1007/978-1-4615-4783-9

1. Flavor. 2. Food--Odor. 3. Cookery, International.

I. Shahidi, Fereidoon, 1951- . II. Ho, Chi-Tang, 1944-

III. Chemical Congress of North America (5th : 1997 : Cancun, Mexico)

TP372.5.F54 1999

664'.5--dc21

99-28547

CIP

Proceedings of a meeting held during the Fifth Chemical Congress of North America, held November 11-15, 1997, in Cancun, Mexico

ISBN 978-1-4613-7166-3

©1999 Springer Science+Business Media New York

Originally published by Kluwer Academic/Plenum Publishers in 1999

Softcover reprint of the hardcover 1st edition 1999

10 9 8 7 6 5 4 3 2 1

A C.I.P. record for this book is available from the Library of Congress.

All rights reserved

No part of this book may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, photocopying, microfilming, recording, or otherwise, without written permission from the Publisher

PREFACE

Flavor is an important quality characteristic of all foods. Both odor- and taste-active components are involved. Although perception of flavor is a chemically-derived phenomenon, a flavor's acceptability and desirability is highly affected by the cultural background and ethnic diversity of the consumers. On this basis, there are distinct differences and particularities in the ingredients as well as the methods of preparation of foods in different regions of the world, and these are also affected by the specific environment, culture, and ethnicity of the people. Changes in the flavors of foods, induced by processing, are also important factors affecting their diversity and characteristics. The use of different types of sauce, such as soy sauce, tomato sauce, and fish sauce, as well as condiments and spices, is of particular importance in defining the cultural and international nature of prepared foods. The source of raw material, particularly when they are available only in certain parts of the world, can also have a profound effect on the availability and popularity of such products. The availability of better and faster modes of transportation and the migration of individuals, each resulting in the intermingling of different cultures, have allowed production of a new generation of prepared foods such as American-Chinese, among others.

The present monograph assembles a collection of scientific contributions on flavor and chemistry of international foods presented during the 5th Chemical Congress of North America, held in November 1997, in Cancun, Mexico, or subsequently solicited by the editors. We are grateful to the authors for their outstanding cooperation and contributions that made the production of this state-of-the-art monograph possible.

Fereidoon Shahidi
Chi-Tang Ho

CONTENTS

1. Flavor and Chemistry of Ethnic Foods: An Overview	1
F. Shahidi and C.-T. Ho	
2. Flavor Components of Shoyu and Miso Japanese Fermented Soybean Seasonings	5
Akio Kobayashi and Etsuko Sugawara	
3. Flavor Characteristics of Indonesian Soy Sauce (<i>Kecap Manis</i>)	15
A. Apriyantono, H. Husain, L. Lie, M. Jodoamidjojo, and N. L. Puspitasari-Nienaber	
4. Volatile Compounds Isolated from Sa Cha Sauce	33
Chao-Yin Tai and Chi-Tang Ho	
5. Formation of Volatile Acids during Fermentation of Fish Sauce	41
Norlita G. Sanceda, Emiko Suzuki, and Tadao Kurata	
6. Flavor Chemistry of Selected Condiments and Spices Used in Chinese Foods . .	55
Chi-Tang Ho, Jiangang Li, and May-Chien Kuo	
7. Character-Impact Aroma Components of Coriander (<i>Coriandrum sativum</i> L.) Herb	77
K. R. Cadwallader, R. Surakarnkul, S.-P. Yang, and T. E. Webb	
8. Wasabi, Japanese Horseradish, and Horseradish: Relationship between Stability and Antimicrobial Properties of Their Isothiocyanates	85
Hideki Masuda, Yasuhiro Harada, Toshio Inoue, Noriaki Kishimoto, and Tatsuo Tano	
9. Flavor Characteristics and Stereochemistry of the Volatile Constituents of Greater Galangal (<i>Alpinia galanga</i> Willd.)	97
Kikue Kubota, Yuki Someya, Yoshiko Kurobayashi, and Akio Kobayashi	
10. Volatile Composition of Pandan Leaves (<i>Pandanus amaryllifolius</i>)	105
J. Jiang	

11. Emission of Blanched Broccoli Volatiles in Headspace during Cooking	111
Heikki Kallio, Päivi Raimoaho, and Tuomas Virtalaine	
12. Flavor of Kweni (<i>Mangifera odorata</i> Griff), an Exotic Tropical Fruit	119
C. H. Wijaya, A. Apriyantono, T. May, H. Raharja, and T. A. Ngakan	
13. Use of Electronic Nose Technology to Examine Apple Quality	127
Arthur M. Spanier, John C. Beaulieu, Karen L. Bett, and Ken Gross	
14. Flavor and Chemistry of Uncured and Cured Meat of Harp Seal (<i>Phoca groenlandica</i>)	141
Fereidoon Shahidi and Ming-Xia Lin	
15. Characterization of Volatile Aldehydes and Pyrazines in Pan-Fried Zousoon . . .	151
Tzou-Chi Huang, Yea-Chyi Chiou, and Chi-Tang Ho	
16. Changes in Flavor-Related Compounds in Meat Treated with Organic Acids . . .	159
Héctor Escalona, Sharon K. Ogden, Isabel Guerrero, and Andrew J. Taylor	
17. Flavor Differences Due to Processing in Dry-Cured and Other Ham Products Using Conducting Polymers (Electronic Nose)	169
Arthur M. Spanier, Monica Flores, and Fidel Toldrá	
18. Thermally Generated Volatiles in Roselle Tea	185
Pi-Jen Tsai, Tzou-Chi Huang, Shyh-Hung Chen, and Chi-Tang Ho	
19. Phenolic Compounds as Astringent Factors in Black Tea Liquors	197
E. Ponce and A. J. Taylor	
20. Tequila Aroma	211
Mercedes G. López	
21. The Formation and Release of Odor Active Compounds during Oxidation of Vegetable Oils	219
J. P. Roozen, P. A. Luning, and M. A. Posthumus	
22. Influence of Seed Roasting Process on the Changes in Volatile Compounds of the Sesame (<i>Sesamum indicum</i> L.) Oil	229
Su Noh Ryu, Seong Min Kim, Junwu Xi, and Chi-Tang Ho	
23. Volatile Components Formed from Various Sugars with β -Alanine in Actual Cookies	239
Sukie Nishibori, Toshihiko Osawa, and Shunro Kawakishi	
24. Aroma Formation in Dried Mullet Roe as Affected by Lipxygenase	251
Bonnie Sun Pan and Chia-Ming Lin	
25. Volatile Compounds Identified in Preserved Duck Eggs	263
Jianhong Chen and Chi-Tang Ho	
Index	269