

Trends in Food Biotechnology

Editor-in-Chief

Ang How Ghee

Department of Chemistry
National University of Singapore
Singapore

Edited by

Nga Been Hen

Department of Microbiology
National University of Singapore

Lim Kay Kong

Prima Limited
Singapore

UNIVERSITÄTSBIBLIOTHEK
HANNOVER
TECHNISCHE
INFORMATIONSBIBLIOTHEK

Proceedings of the 7th World Congress of Food Science and Technology
Singapore — October 1987

[28.9-2.10.1987]

Contents

Foreword	<i>Eric von Sydow</i>	iii
Introduction	<i>Nga Been Hen and Lim Kay Kong</i>	v
Contributors		vii

Part One Biotechnological Process

1	The Impact of Biotechnology on Food Processing	3
	<i>Pekka Linko</i>	
2	Biotechnology and Food Processing	7
	<i>R.L. Earle</i>	
3	Microbial Production of Primary Metabolites	14
	<i>Ramunas Bigelis</i>	
4	Development and Optimization of Solid Substrate Cultivation of Pectinase	19
	<i>D.M. Alba, S.M. Maldo, T.M. Espino and C.B. Pham</i>	
5	Protein Enrichment of Cassava Solid Waste by Solid Substrate Fermentation	25
	<i>Lindajati Tanuwidjaja and Lih Anah</i>	
6	Serine Production by a Methanol-utilizing Bacterium	29
	<i>Yoshikazu Izumi, Silvia Susana Miyazaki and Hideaki Yamada</i>	
7	Microbial Lysine Production Using Coconut Water for Feed Fortification	32
	<i>Chay B. Pham, Flor Crisanta F. Galvez and Teresita J. Ramirez</i>	
8	The Newfoundland Process for the Production of Microbial Biomass in Northern Regions	39
	<i>Antonio M. Martin</i>	
9	Production of Biomasses through Biological Recycling for Animal Feeding Purposes	42
	<i>J. De La Noüe, D. Proulx, B. Cyr and Y. Pouliot</i>	
10	Shelf-Life of Enzymatically Deaerated Fresh Chilled Orange Juice	44
	<i>Ifat Sagi and Chaim H. Mannheim</i>	
11	Desalting of Soy Sauce by Counter Diffusion	47
	<i>Nguyen, M.H., Giddy, M., Skurray, G.R., and Wyllie, S.G.</i>	

Part Two Biotechnological Products

12	Production of Nucleotides by Bacteria	59
	<i>Akira Furuya</i>	
13	Development of New Alcoholic Fermented Seasonings	65
	<i>Yoshinobu Kaji, Kenji Watanabe and Shigenori Ohta</i>	

- 14 Canola Meal as a Soybean Substitute for Sauce Production 72
B. Ooraikul and A.A. Coleman
- 15 Fish Sauce from Capelin (*Mallotus villosus*) – Contribution of Cathepsin C to the Fermentation 75
Nongnuch Raksakulthai and Norman F. Haard
- 16 Preparation and Characterization of Tofuyo (Fermented Soybean Curd) 82
Masaaki Yasuda and Akio Kobayashi
- 17 Gellan Gum – Biotechnology Produces A New Food Hydrocolloid 87
Philip Jackson
- 18 Functional Properties of Enzymically-hydrolysed Fish Waste 95
G.M. Hall and N. Ahmad

Part Three Micro-organisms

- 19 Microbiology of Pre-Fermented Doughs 101
C.I. Juwah and B.J.B. Wood
- 20 Simple and Economic Investigative Methodology for Behaviour and Identity of Yeasts and Yeast-like Fungi 107
R.R. Davenport
- 21 Effect of Stress on Recovery of Bacteria of Importance in Foods 109
F. Casey, M.E. Upton and A.J. McLoughlin
- 22 Isolation of an Amyolytic Lactic Acid Bacteria from “Burong Bangus” 114
Minerva Olympia and Mitsuo Takano
- 23 Biotechnological Aspects of Lactobacillus Strains in Food Fermentation 121
Byong H. Lee
- 24 Physiological Aspects Influencing the Response of *Pseudomonas aeruginosa* to UV and Hydrogen Peroxide Treatment 129
M.E. Upton, A.J. McLoughlin and R. Burke
- 25 Genetic Studies of Tributyrin Non-Utilising Mutants of *Yarrowia lipolytica* 132
B.H. Nga, H. Heslot, C.M. Gaillardin, P. Fournier and K. Chan

Part Four Enzymes

- 26 Novel Uses of Enzymes in Food Processing 139
Hans Sejr Olsen and Flemming Mark Christensen
- 27 Enzymes in Food Technology 147
Peter Johann
- 28 The Application of Bacterial Cellulose to Processed Foods 153
A. Okiyama, M. Motoki and S. Yamanaka
- 29 Immobilization and Industrial Application of Glucose Isomerase 156
Y.C. Jao
- 30 Effect of Enzymes on Aroma Changes in Vegetables during Frozen Storage 169
Miang Hoong Lim, Andi Ou Chen, Rose Marie Pangborn and John R. Whitaker
- 31 Enzyme Selection as Blanching Index of Frozen Vegetable Soybeans 177
Andi Ou Chen, Kwo-Bing Jiang and Wen-Joe Chuang
- 32 The Inhibitory Effect of Added Iron on the Activity of Trypsin in the Determination of the In Vitro Digestibility of Casein 185
Pirkko Antila and John E. Kinsella

Part Five Traditional Fermented Foods

- 33 The Role of Indigenous Fermented Foods in the History of Man 193
Keith H. Steinkraus
- 34 The Future of Fermented Foods in Southeast Asia 198
Stanton, W.R.
- 35 Advances in the Indigenous Fermented Foods in the Philippines 206
Priscilla C. Sanchez
- 36 Tempeh Research in the Netherlands 218
Rombouts, F.M. and Nout, M.J.R.
- 37 The Quality of Tempe in Indonesia 221
Hari R. Hariyadi, Lindajati Tanuwidjaja and Yetty Mulyati
- 38 High-Vitamin B₁₂ Tempeh by Mixing Fermentation 225
Suparmo S. and Markakis, P.
- 39 Microflora of Semayi, an Indonesian Traditional Fermented Food 228
Kapti Rahayu Kuswanto, Joedoro Soedarsono and Michio Kozaki
- 40 Factors Affecting Quality of Pedah Siam 236
Hanafiah, T.A.R. and Pigott, G.M.
- 41 Plaa Chao – Traditional Thai Fermented Fish 245
Bulan Phithakpol
- 42 Nutritional Quality of Fermented Mungbean (*Vigna radiata* Wilczek) 249
Agnes F. Zamora, Mary G. Gewan, Lourdes M. Mangaban and Emeline Olaiwar
- 43 Tapioca Fermentation Using *Rhizopus arrhizus* var. *rouxii* 253
Zaiton Hassan, Augustin, M.A., Karim, M.I. and Jamaliah Ahmad
- 44 Changes in Texture and Proteins during Acid-salt Curing, Sake Lee Curing and Miso Curing of Fish Meat 257
Michiko Shimomura and Juichiro J. Matsumoto
- 45 The Effect of Microbial Activity on Two Popular Indigenous Fermented Foods of Ethiopia 265
Berhanu A. Gashe
- 46 Use of Traditional South Pacific Fermentation of Staple Carbohydrate Foods in the Production of Wheat Flour Substitutes 268
William Aalbersberg, Susan Parkinson and Ishwari Prasad
- 47 Identification of the Flavour Compounds of Yoghurt and Soymilk Yoghurt 270
Shi Huang, Feng Jianjun and Li Qiang
- 48 Pilot Scale Production of Root Crop-Based Soy Sauce 280
Emma S. Data, Julie Diamante, Ramon R. Orias, Myrna B. Pepino and Jose Alkuino

Part Six Miscellaneous

- 49 Progress in Oriental Food Science and Technology 291
Adinan Husin and Yeoh Quee Lan
- 50 Full Fat Soya Flour and its Application 300
Michel Gavin
- 51 PSM – A Bland-Tasting Derivative from Soybeans having Many Different Uses 303
David A. Lewis
- 52 Physical Characterization of Soymilk 307
Oguntunde, A.O., Walstra, P. and Vliet, T. Van

- 53 . Transparent Noodles from other Bean Starches 309
Suwanna Sisawad and Intravud Chatket
- 54 Production and Acceptability Testing of Fish-Enriched Noodles 319
Yu, S.Y. and Tan, L.K.
- 55 Process Meat Flavour Development and the Role of Sulphur Compunds 322
G.A.M. Van den Ouweland