

# **Food Technology and Biotechnology**

**Vol. 49**

**Contents, Author and Subject Index**

**ZAGREB  
CROATIA  
2011**

## CONTENTS

### REVIEWS

<b>Abdallah Bouguettoucha, Béatrice Balannec and Abdeltif Amrane</b> Unstructured Models for Lactic Acid Fermentation – A Review . . . . . (1)	3
<b>Višnja Bačun-Družina, Ana Butorac, Jasna Mrvčić, Tibela Landeka Dragičević and Vesna Stehlik-Tomas</b> Bacterial Stationary-Phase Evolution . . . . . (1)	13
<b>Dubravko Pavoković and Marijana Krsnik-Rasol</b> Complex Biochemistry and Biotechnological Production of Betalains . . . . . (2)	145
<b>Dajana Gašo-Sokač, Spomenka Kovač and Djuro Josić</b> Use of Proteomic Methodology in Optimization of Processing and Quality Control of Food of Animal Origin . . . . . (4)	397
<b>Amanda Reges de Sena, Sandra Aparecida de Assis and Aleksandro Branco</b> Analysis of Theobromine and Related Compounds by Reversed Phase High-Performance Liquid Chromatography with Ultraviolet Detection: An Update (1992-2011) . . . . . (4)	413
<b>Danyo Maia Lima, Pedro Fernandes, Diego Sampaio Nascimento, Rita de Cássia L. Figueiredo Ribeiro and Sandra Aparecida de Assis</b> Fructose Syrup: A Biotechnology Asset . . . . . (4)	424

### ORIGINAL SCIENTIFIC PAPERS

<b>Nataša Bauer, Hrvoje Fulgosi and Sibila Jelaska</b> Overexpression of Phenylalanine Ammonia-Lyase in Transgenic Roots of <i>Coleus blumei</i> Alters Growth and Rosmarinic Acid Synthesis . . . . . (1)	24
<b>Biljana Balen, Petra Peharec, Mirta Tkalec and Marijana Krsnik-Rasol</b> Oxidative Stress in Horseradish ( <i>Armoracia lapathifolia</i> Gilib.) Tissues Grown <i>in vitro</i> . . . . . (1)	32
<b>Adam Jurgoński, Joanna Milala, Jerzy Juśkiewicz, Zenon Zduńczyk and Bogusław Król</b> Composition of Chicory Root, Peel, Seed and Leaf Ethanol Extracts and Biological Properties of Their Non-Inulin Fractions . . . . . (1)	40
<b>Huong Thi My Nguyen, Khalifa Serigne Babacar Sylla, Zo Randriamahatody, Clair Donnay-Moreno, Jacques Moreau, Luyen Thi Tran and Jean Pascal Bergé</b> Enzymatic Hydrolysis of Yellowfin Tuna ( <i>Thunnus albacares</i> ) By-Products Using Protamex Protease . . (1)	48
<b>Vlatka Petravić-Tominac, Vesna Zechner-Krpan, Katarina Berković, Petra Galović, Zoran Herceg, Siniša Srećec and Igor Špoljarić</b> Rheological Properties, Water-Holding and Oil-Binding Capacities of Particulate $\beta$ -Glucans Isolated from Spent Brewer's Yeast by Three Different Procedures . . . . . (1)	56
<b>Svetlana V. Kamzolova, Alina R. Fatykhova, Emiliya G. Dedyukhina, Savas G. Anastassiadis, Nikolay P. Golovchenko and Igor G. Morgunov</b> Citric Acid Production by Yeast Grown on Glycerol-Containing Waste from Biodiesel Industry . . (1)	65
<b>Antonija Trontel, Ana Batušić, Ivana Gusić, Anita Slavica, Božidar Šantek and Srđan Novak</b> Production of D- and L-Lactic Acid by Mono- and Mixed Cultures of <i>Lactobacillus</i> sp. . . . . (1)	75
<b>María José Rodríguez Vaquero, Pedro Adrián Aredes Fernández and María Cristina Manca de Nadra</b> Effect of Phenolic Compound Mixtures on the Viability of <i>Listeria monocytogenes</i> in Meat Model . (1)	83
<b>María-Dolores Esteban and Alfredo Palop</b> Nisin, Carvacrol and Their Combinations Against the Growth of Heat-Treated <i>Listeria monocytogenes</i> Cells . . . . . (1)	89
<b>Hai Kuan Wang, Jing Shao, Yu Jie Wei, Jie Zhang and Wei Qi</b> A Novel Low-Temperature Alkaline Lipase from <i>Acinetobacter johnsonii</i> LP28 Suitable for Detergent Formulation . . . . . (1)	96
<b>Vitor Cardoso Aragão, Maria Rita Alaniz Porto, Carlos André Veiga Burkert, Susana Juliano Kalil and Janaína Fernandes de Medeiros Burkert</b> Response Surface Methodology Approach for the Synthesis of Ethyl Butyrate . . . . . (1)	103

<b>Dunja Leljak-Levanić, Hana Čipčić Paljetak, Lidija Uzelac, Snježana Mihaljević, Nataša Bauer, Marijana Krsnik-Rasol and Sibila Jelaska</b>	
Extracellular Glycoproteins in Embryogenic Culture of Pumpkin ( <i>Cucurbita pepo</i> L.) . . . . . (2)	156
<b>Rudragoud S. Policegoudra, Raghu H. Chandrashekhar, Somaradhya M. Aradhya and Lokendra Singh</b>	
Cytotoxicity, Platelet Aggregation Inhibitory and Antioxidant Activity of <i>Curcuma amada</i> Roxb. Extracts . . . . . (2)	162
<b>Nivedita Sharma, Riti Kapoor, Neha Gautam and Ranjana Kumari</b>	
Purification and Characterization of Bacteriocin Produced by <i>Bacillus subtilis</i> R75 Isolated from Fermented Chunks of Mung Bean ( <i>Phaseolus radiatus</i> ) . . . . . (2)	169
<b>Bartosz Brzozowski, Włodzimierz Bednarski and Piotr Gołek</b>	
The Adhesive Capability of Two <i>Lactobacillus</i> Strains and Physicochemical Properties of Their Synthesized Biosurfactants . . . . . (2)	177
<b>María S. Cabeza, Fanny L. Baca, Ernesto Muñoz Puentes, Flavia Loto, Mario D. Baigorí and Vilma I. Morata</b>	
Selection of Psychrotolerant Microorganisms Producing Cold-Active Pectinases for Biotechnological Processes at Low Temperature . . . . . (2)	187
<b>Igor Dubrović, Zoran Herceg, Anet Režek Jambrak, Marija Badanjak and Verica Dragović-Uzelac</b>	
Effect of High Intensity Ultrasound and Pasteurization on Anthocyanin Content in Strawberry Juice . (2)	196
<b>Mumtaz Ali, Mohammad Arfan, Habib Ahmad, Khair Zaman, Farhatullah Khan and Ryszard Amarowicz</b>	
Comparative Antioxidant and Antimicrobial Activities of Phenolic Compounds Extracted from Five <i>Hypericum</i> Species. . . . . (2)	205
<b>Igor Lukić, Borislav Miličević, Mara Banović, Srećko Tomas, Sanja Radeka and Đordano Peršurić</b>	
Secondary Aroma Compounds in Fresh Grape Marc Distillates as a Result of Variety and Corresponding Production Technology. . . . . (2)	214
<b>Ajay Pal and Farhath Khanum</b>	
Identification and Optimization of Critical Medium Components Using Statistical Experimental Designs for Enhanced Production of Xylanase from <i>Aspergillus flavus</i> DFR-6 . . . . . (2)	228
<b>Osman Kılınççeker</b>	
The Behaviour of Some Vegetable-Based Materials Used as Edible Coating on Chicken Nuggets. . . (2)	237
<b>Giovanna Boff Araujo Pinto, Marcelo Silva, Ralf Greiner, Uschi Konietzny, Carlos Ricardo Soccol, Michele Rigon Spier, Marco Aurélio da Silva Carvalho Filho, Ashok Pandey and Vanete Thomaz-Soccol</b>	
Application of Polymerase Chain Reaction for High Sensitivity Detection of Roundup Ready™ Soybean Seeds and Grains in Varietal Mixtures. . . . . (3)	277
<b>Jalaja Vidya, Ushasree Mrudula Vasudevan, Carlos Ricardo Soccol and Ashok Pandey</b>	
Cloning, Functional Expression and Characterization of L-Asparaginase II from <i>E. coli</i> MTCC 739. . (3)	286
<b>Rishikesh Shukla, Shraddha Shukla, Veselin Bivolarski, Ilia Iliev, Iskra Ivanova and Arun Goyal</b>	
Structural Characterization of Insoluble Dextran Produced by <i>Leuconostoc mesenteroides</i> NRRL B-1149 in the Presence of Maltose . . . . . (3)	291
<b>Seema Patel, Damini Kothari and Arun Goyal</b>	
Purification and Characterization of an Extracellular Dextranase from <i>Pediococcus pentosaceus</i> Isolated from the Soil of North East India . . . . . (3)	297
<b>Ushasree Mrudula Vasudevan, Sumayya Husaiba Beevi Salim and Ashok Pandey</b>	
A Comparative Analysis of Recombinant Expression and Solubility Screening of Two Phytases in <i>E. coli</i> . . . . . (3)	304
<b>Sangeeta Negi, Suneel Gupta and Rintu Banerjee</b>	
Extraction and Purification of Glucoamylase and Protease Produced by <i>Aspergillus awamori</i> in a Single-Stage Fermentation. . . . . (3)	310
<b>Natalia Lorena Rojas, Gastón Ezequiel Ortiz, Mariana Chesini, Diego Jorge Baruque and Sebastián Fernando Cavalitto</b>	
Optimization of the Production of Polygalacturonase from <i>Aspergillus kawachii</i> Cloned in <i>Saccharomyces cerevisiae</i> in Batch and Fed-Batch Cultures . . . . . (3)	316
<b>Anshu Singh, Arindam Kuila, Geetanjali Yadav and Rintu Banerjee</b>	
Process Optimization for the Extraction of Polyphenols from Okara . . . . . (3)	322

<b>Raquel Aizemberg, Werner D. M. Terrazas, Suzana Ferreira-Dias, Sandro R. Valentini and Edwil A. L. Gattás</b>		
Optimal Conditions for Biomass and Recombinant Glycerol Kinase Production Using the Yeast <i>Pichia pastoris</i> . . . . .	(3)	329
<b>Dhanya Gangadharan, K. Madhavan Nampoothiri and Ashok Pandey</b>		
$\alpha$ -Amylase Production by <i>Bacillus amyloliquefaciens</i> Using Agro Wastes as Feed Stock . . . . .	(3)	336
<b>Andréia A. J. Carneiro, Ellen C. Giese, Aneli M. Barbosa, Eleni Gomes and Roberto Da Silva</b>		
<i>Agaricus blazei</i> as a Substrate for the Production of $\beta$ -1,3-Glucanase by <i>Trichoderma harzianum</i> Rifai. . . . .	(3)	341
<b>Mariana V. Revuelta, Marcela B. Fernández van Raap, Pedro Mendoza Zélis, Francisco H. Sánchez and Guillermo R. Castro</b>		
Ascorbic Acid Encapsulation in Hydrophobic Silica Xerogel. . . . .	(3)	347
<b>Gladys G. Pérez-Morales, Ascención Ramírez-Coronel, Oswaldo Guzmán-López, Francisco Cruz-Sosa, Isabelle Perraud-Gaime, Sevastianos Roussos and Gerardo Saucedo-Castañeda</b>		
Feruloyl Esterase Activity from Coffee Pulp in Solid-State Fermentation . . . . .	(3)	352
<b>Dubravko Pavoković, Osman Omarszad, Stéphane Maury, Claude Joseph, Alain Delaunay, Marijana Krsnik-Rasol and Daniel Hagège</b>		
The Role of Carbohydrate-Metabolizing Enzymes in Sugar Sensing and Differentiation in Sugar Beet Cell Lines . . . . .	(4)	435
<b>Kristina Radošević, Ruđer Novak, Igor Slivac, Mirna Mihajlović, Jerka Dumić, Zlatko Kniewald and Višnja Gaurina Srček</b>		
Cytotoxic and Apoptotic Effects of 17 $\alpha$ -Ethinylestradiol and Diethylstilbestrol on CHO-K1 Cells . . . . .	(4)	447
<b>Sunil Kumar, Praduman Yadav, Veena Jain and Sarla P. Malhotra</b>		
Oxidative Stress and Antioxidative System in Ripening Ber ( <i>Ziziphus mauritiana</i> Lam.) Fruits. . . . .	(4)	453
<b>Leandro Piovan, Edna Kagohara, Juliana Alves Vale, João Valdir Comasseto, Iracema Helena Schoenlein-Crusius, Leandro Helgueira Andrade and André Luiz Meleiro Porto</b>		
Demethylation of <i>N,N</i> -Dimethylbenzenamine and <i>N,N,3</i> -Trimethylbenzenamine by Whole Cells of <i>Aspergillus terreus</i> . . . . .	(4)	460
<b>Shaheen Aziz, Fatima Jalal, Muhammad Nawaz, Bushra Niaz, Farman Ali Shah, Muhammad Hafeez-ur-Rahman Memon, Farooq Latif, Shahid Nadeem and Muhammad Ibrahim Rajoka</b>		
Hyperproduction and Thermal Characterization of a Novel Invertase from a Double Mutant Derivative of <i>Kluyveromyces marxianus</i> . . . . .	(4)	465
<b>Etjen Bizaj, Franc Čuš and Peter Raspor</b>		
Removal of Pyrimethanil and Fenhexamid from <i>Saccharomyces cerevisiae</i> Liquid Cultures . . . . .	(4)	474
<b>Jing Wang, Xiaoping Yuan, Baoguo Sun and Yanping Cao</b>		
Inhibition of Lipid Peroxidation by Enzymatic Hydrolysates from Wheat Bran. . . . .	(4)	481
<b>Narumon Sawasdipuksa, Zhentian Lei, Lloyd W. Sumner, Ploypat Niyomploy and Polkit Sangvanich</b>		
A Lysozyme with Antifungal Activity from <i>Pithecellobium dulce</i> Seeds . . . . .	(4)	489
<b>Anita Šalić, Ana Tušek, Diana Fabek, Ivana Rukavina and Bruno Zelić</b>		
Aqueous Two-Phase Extraction of Polyphenols Using a Microchannel System – Process Optimization and Intensification . . . . .	(4)	495
<b>Grazina Juodeikiene, Joana Salomskiene, Dalia Eidukonyte, Daiva Vidmantiene, Vilma Narbutaite and Lina Vaiciulyte-Funk</b>		
The Impact of Novel Fermented Products Containing Extruded Wheat Material on the Quality of Wheat Bread. . . . .	(4)	502
<b>Martina Bituh, Vesna Žižić, Ines Panjkota Krbavčić, Zvonko Zadro and Irena Colić Barić</b>		
Gluten-Free Products Are Insufficient Source of Folate and Vitamin B <sub>12</sub> for Coeliac Patients. . . . .	(4)	511

#### PRELIMINARY COMMUNICATIONS

<b>Kuan-Chen Cheng, Jiun-Tsai Lin and Wen-Hsiung Liu</b>		
Extracts from Fermented Black Soybean Milk Exhibit Antioxidant and Cytotoxic Activities . . . . .	(1)	111
<b>Woeheoudama Sagoua, Marie-Noëlle Ducamp, Gérard Loiseau and Luc de Lapeyre de Bellaire</b>		
Effect of Lactoperoxidase System on the Control of <i>Colletotrichum musae</i> on Bananas. . . . .	(2)	244

**Arzu Altunkaya and Vural Gökmen**

- Purification and Characterization of Polyphenol Oxidase, Peroxidase and Lipoxygenase from Freshly Cut Lettuce (*L. sativa*) . . . . . (2) 249

**SCIENTIFIC NOTES****Anna Iwaniak and Jerzy Dziuba**

- BIOPEP-PBIL Tool for the Analysis of the Structure of Biologically Active Motifs Derived from Food Proteins . . . . . (1) 118

**Premuda Saman, Pablo Fuciños, José A. Vázquez and Severino S. Pandiella**

- Fermentability of Brown Rice and Rice Bran for Growth of Human *Lactobacillus plantarum* NCIMB 8826. . . . . (1) 128

**Dániel Radva, János Spanyol and Judit Kosáry**

- Testing of the Effect of Reaction Parameters on the Enzyme Immobilization by Adsorption and Cross-Linking Processes with Kinetic Desorption Method. . . . . (2) 257

**Ioannis S. Bozaris, Charalampos Proestos, Maria Kapsokefalou and Michael Komaitis**

- Antimicrobial Effect of *Filipendula ulmaria* Plant Extract Against Selected Foodborne Pathogenic and Spoilage Bacteria in Laboratory Media, Fish Flesh and Fish Roe Product . . . . . (2) 263

**Jacqueline Sugitani Chimilovski, Sascha Habu, Richard Phillipy Bosqui Teixeira, Vanete Thomaz-Soccol, Miguel Daniel Nosedá, Adriane Bianchi Pedroni Medeiros, Ashok Pandey and Carlos Ricardo Soccol**

- Antitumour Activity of *Grifola frondosa* Exopolysaccharides Produced by Submerged Fermentation Using Sugar Cane and Soy Molasses as Carbon Sources . . . . . (3) 359

**Juliano De Dea Lindner, Marcela Santarelli, Caroline Tiemi Yamaguishi, Carlos Ricardo Soccol and Erasmo Neviani**

- Recovery and Identification of Bovine Colostrum Microflora Using Traditional and Molecular Approaches . . . . . (3) 364

**María Teresa Torres-Mancera, Jesús Cordova-López, Gabriela Rodríguez-Serrano, Sevastianos Roussos, Ma. Ascención Ramírez-Coronel, Ernesto Favela-Torres and Gerardo Saucedo-Castañeda**

- Enzymatic Extraction of Hydroxycinnamic Acids from Coffee Pulp. . . . . (3) 369

**Miguel Angel Arellano-González, Ma. Ascención Ramírez-Coronel, María Teresa Torres-Mancera, Gladys G. Pérez-Morales, Gerardo Saucedo-Castañeda**

- Antioxidant Activity of Fermented and Nonfermented Coffee (*Coffea arabica*) Pulp Extracts . . . . . (3) 374

**Konstantina Tsaousi, Asimina Velli, Filippou Akarepis, Loulouda Bosnea, Chryssoula Drouza, Athanasios A. Koutinas and Argyro Bekatorou**

- Low-Temperature Winemaking by Thermally Dried Immobilized Yeast on Delignified Brewer's Spent Grains. . . . . (3) 379

**Gisele Fátima Morais Nunes, Ariela Veloso de Paula, Heizir Ferreira de Castro and Júlio César dos Santos**

- Optimization of the Enzymatic Interesterification of Milk Fat and Canola Oil Blends Using Immobilized *Rhizopus oryzae* Lipase by Response Surface Methodology . . . . . (3) 385

**Isaias Nava, Ernesto Favela-Torres and Gerardo Saucedo-Castañeda**

- Effect of Mixing on the Solid-State Fermentation of Coffee Pulp with *Aspergillus tamarii* . . . . . (3) 391

**Jelka Pleadin, Ana Vulić, Nina Perši, Dinka Milić and Nada Vahčić**

- Ractopamine and Clenbuterol Urinary Residues in Pigs as Food-Producing Animals. . . . . (4) 517

**Mauro Musto**

- DNA Quality and Integrity of Nuclear and Mitochondrial Sequences from Beef Meat as Affected by Different Cooking Methods . . . . . (4) 523

**Bruno Fedrizzi, Emanuele Tosi, Barbara Simonato, Fabio Finato, Michela Cipriani, Giovanna Caramia and Giacomo Zapparoli**

- Changes in Wine Aroma Composition According to Botrytized Berry Percentage: A Preliminary Study on Amarone Wine . . . . . (4) 529

## APPENDICES

<b>Vladimir Mrša</b>		
Editor's Letter. . . . .	(1)	1
<b>Jasna Vorkapić-Furač</b>		
Book Review (Homage to Vladimir Prelog) . . . . .	(1)	136
<b>Carlos Ricardo Soccol, Ashok Pandey, Christian Larroche and Vanete Thomaz-Soccol</b>		
Preface. . . . .	(3)	275
<b>Miroslav Radman</b>		
To the memory of Professor Zoran Zgaga (1956–2011) . . . . .	(1)	134
<b>Vesna Stehlik-Tomas</b>		
To the memory of Professor Slobodan Grba (1942–2011) . . . . .	(2)	271
<b>Leo Klasinc</b>		
To the memory of Professor Zvonimir Maksić (1938–2011) . . . . .	(2)	273

## AUTHOR INDEX

Ahmad, Habib . . . . .	(2)	205	Comasseto, João Valdir . . . . .	(4)	460
Aizemberg, Raquel . . . . .	(3)	329	Cordova-López, Jesús . . . . .	(3)	369
Akarepis, Filippou . . . . .	(3)	379	Cruz-Sosa, Francisco . . . . .	(3)	352
Ali, Mumtaz . . . . .	(2)	205	Čipčić Paljetak, Hana . . . . .	(2)	156
Altunkaya, Arzu . . . . .	(2)	249	Čuš, Franc . . . . .	(4)	474
Amarowicz, Ryszard . . . . .	(2)	205	Dea Lindner, Juliano De . . . . .	(3)	364
Amrane, Abdeltif . . . . .	(1)	3	Dedyukhina, Emiliya G. . . . .	(1)	65
Anastassiadis, Savas G. . . . .	(1)	65	Delaunay, Alain. . . . .	(4)	435
Andrade, Leandro Helgueira . . . . .	(4)	460	Donnay-Moreno, Clair . . . . .	(1)	48
Aradhya, Somaradhya M. . . . .	(2)	162	Dragović-Uzelac, Verica . . . . .	(2)	196
Aragão, Vitor Cardoso . . . . .	(1)	103	Drouza, Chryssoula . . . . .	(3)	379
Aredes Fernández, Pedro Adrián . . . . .	(1)	83	Dubrović, Igor . . . . .	(2)	196
Arellano-González, Miguel Angel . . . . .	(3)	374	Ducamp, Marie-Noëlle . . . . .	(2)	244
Arfan, Mohammad . . . . .	(2)	205	Dumić, Jerka . . . . .	(4)	447
Assis, Sandra Aparecida de . . . . .	(4)	413, 424	Dziuba, Jerzy . . . . .	(1)	118
Aziz, Shaheen . . . . .	(4)	465	Eidukonyte, Dalia . . . . .	(4)	502
Baca, Fanny L. . . . .	(2)	187	Esteban, María-Dolores . . . . .	(1)	89
Baćun-Družina, Višnja . . . . .	(1)	13	Fabek, Diana . . . . .	(4)	495
Badanjak, Marija . . . . .	(2)	196	Fatykhova, Alina R. . . . .	(1)	65
Baigorí, Mario D. . . . .	(2)	187	Favela-Torres, Ernesto . . . . .	(3)	369, 391
Balannec, Béatrice . . . . .	(1)	3	Fedrizzi, Bruno . . . . .	(4)	529
Balen, Biljana . . . . .	(1)	32	Fernandes, Pedro . . . . .	(4)	424
Banerjee, Rintu . . . . .	(3)	310, 322	Fernandes van Raap, Marcela B. . . . .	(3)	347
Banović, Mara . . . . .	(2)	214	Ferreira de Castro, Heizir . . . . .	(3)	385
Barbosa, Aneli M. . . . .	(3)	341	Ferreira-Dias, Suzana . . . . .	(3)	329
Baruque, Diego Jorge . . . . .	(3)	316	Finato, Fabio . . . . .	(4)	529
Batušić, Ana . . . . .	(1)	75	Fuciños, Pablo . . . . .	(1)	128
Bauer, Nataša . . . . .	(1, 2)	24, 156	Fulgosi, Hrvoje . . . . .	(1)	24
Bednarski, Włodzimierz . . . . .	(2)	177	Galović, Petra . . . . .	(1)	56
Bekatorou, Argyro . . . . .	(3)	379	Gangadharan, Dhanya . . . . .	(3)	336
Bergé, Jean Pascal . . . . .	(1)	48	Gašo-Sokač, Dajana . . . . .	(4)	397
Berković, Katarina . . . . .	(1)	56	Gattás, Edwil A. L. . . . .	(3)	329
Bianchi Pedroni Medeiros, Adriane . . . . .	(3)	359	Gaurina Srček, Višnja . . . . .	(4)	447
Bituh, Martina . . . . .	(4)	511	Gautam, Neha . . . . .	(2)	169
Bivolarski, Veselin . . . . .	(3)	291	Giese, Ellen C. . . . .	(3)	341
Bizaj, Etjen . . . . .	(4)	474	Gökmen, Vural . . . . .	(2)	249
Bosnea, Loulouda . . . . .	(3)	379	Gołek, Piotr . . . . .	(2)	177
Bosqui Teixeira, Richard Phillipy . . . . .	(3)	359	Golovchenko, Nikolay P. . . . .	(1)	65
Bouguettoucha, Abdallah . . . . .	(1)	3	Gomes, Eleni . . . . .	(3)	341
Boziaris, Ioannis S. . . . .	(2)	263	Goyal, Arun . . . . .	(3)	291, 297
Branco, Aleksandro . . . . .	(4)	413	Greiner, Ralf . . . . .	(3)	277
Brzozowski, Bartosz . . . . .	(2)	177	Gupta, Suneel . . . . .	(3)	310
Burkert, Carlos André Veiga . . . . .	(1)	103	Gusić, Ivana . . . . .	(1)	75
Burkert, Janaína Fernandes de Medeiros . . . . .	(1)	103	Guzmán-López, Oswaldo . . . . .	(3)	352
Butorac, Ana . . . . .	(1)	13	Habu, Sascha . . . . .	(3)	359
Cabeza, María S. . . . .	(2)	187	Hagège, Daniel . . . . .	(4)	435
Cao, Yanping . . . . .	(4)	481	Herceg, Zoran . . . . .	(1, 2)	56, 196
Caramia, Giovanna . . . . .	(4)	529	Husaiba Beevi Salim, Sumayya . . . . .	(3)	304
Carneiro, Andréia A. J. . . . .	(3)	341	Iliev, Ilia . . . . .	(3)	291
Castro, Guillermo R. . . . .	(3)	347	Ivanova, Iskra . . . . .	(3)	291
Cavalitto, Sebastián Fernando . . . . .	(3)	316	Iwaniak, Anna . . . . .	(1)	118
César dos Santos, Júlio . . . . .	(3)	385			
Chandrashekar, Raghu H. . . . .	(2)	162			
Cheng, Kuan-Chen . . . . .	(1)	111			
Chesini, Mariana . . . . .	(3)	316			
Cipriani, Michela . . . . .	(4)	529			
Colić Barić, Irena . . . . .	(4)	511			

Jain, Veena . . . . .	(4)	453	Muñoz Puentes, Ernesto . . . . .	(2)	187
Jalal, Fatima . . . . .	(4)	465	Musto, Mauro . . . . .	(4)	523
Jelaska, Sibila . . . . .	(1, 2)	24, 156	Nadeem, Shahid . . . . .	(4)	465
Joseph, Claude . . . . .	(4)	435	Nampoothiri, K. Madhavan . . . . .	(3)	336
Josić, Djuro . . . . .	(4)	397	Narbutaite, Vilma . . . . .	(4)	502
Juodeikiene, Grazina . . . . .	(4)	502	Nascimento, Diego Sampaio . . . . .	(4)	424
Jurgoński, Adam . . . . .	(1)	40	Nava, Isaias . . . . .	(3)	391
Juskiewicz, Jerzy . . . . .	(1)	40	Nawaz, Muhammad . . . . .	(4)	465
Kagohara, Edna . . . . .	(4)	460	Negi, Sangeeta . . . . .	(3)	310
Kalil, Susana Juliano . . . . .	(1)	103	Neviani, Erasmo . . . . .	(3)	364
Kamzolova, Svetlana V. . . . .	(1)	65	Nguyen, Huong Thi My . . . . .	(1)	48
Kapoor, Riti . . . . .	(2)	169	Niaz, Bushra . . . . .	(4)	465
Kapsokefalou, Maria . . . . .	(2)	263	Niyomploy, Ploypat . . . . .	(4)	489
Khan, Farhatullah . . . . .	(2)	205	Nosedá, Miguel Daniel . . . . .	(3)	359
Khanum, Farhath . . . . .	(2)	228	Novak, Ruđer . . . . .	(4)	447
Kılınççeker, Osman . . . . .	(2)	237	Novak, Srđan. . . . .	(1)	75
Klasinc, Leo . . . . .	(2)	273	Omarszad, Osman . . . . .	(4)	435
Kniewald, Zlatko . . . . .	(4)	447	Ortiz, Gastón Ezequiel . . . . .	(3)	316
Komaitis, Michael . . . . .	(2)	263	Pal, Ajay. . . . .	(2)	228
Konietzny, Uschi . . . . .	(3)	277	Palop, Alfredo . . . . .	(1)	89
Kosáry, Judit . . . . .	(2)	257	Pandey, Ashok . . . . .	(3)	275, 277, 286, 304, 336, 359
Kothari, Damini . . . . .	(3)	297	Pandiella, Severino S. . . . .	(1)	128
Koutinas, Athanasios A. . . . .	(3)	379	Panjkota Krbavčić, Ines . . . . .	(4)	511
Kovač, Spomenka . . . . .	(4)	397	Patel, Seema . . . . .	(3)	297
Król, Bogusław . . . . .	(1)	40	Pavoković, Dubravko . . . . .	(2, 4)	145, 435
Krsnik-Rasol, Marijana . . . . .	(1, 2, 4)	32, 145, 156, 435	Peharec, Petra . . . . .	(1)	32
Kuila, Arindam . . . . .	(3)	322	Pérez-Morales, Gladys G. . . . .	(3)	352, 374
Kumar, Sunil . . . . .	(4)	453	Perraud-Gaime, Isabelle . . . . .	(3)	352
Kumari, Ranjana . . . . .	(2)	169	Peršič, Nina . . . . .	(4)	517
Landeka Dragičević, Tibela . . . . .	(1)	13	Peršurić, Đordano . . . . .	(2)	214
Lapeyre de Bellaire, Luc de . . . . .	(2)	244	Petravić-Tominac, Vlatka . . . . .	(1)	56
Larroche, Christian . . . . .	(3)	275	Pinto, Giovana Boff Araujo . . . . .	(3)	277
Latif, Farooq . . . . .	(4)	465	Piovan, Leandro . . . . .	(4)	460
Lei, Zhentian . . . . .	(4)	489	Pleadin, Jelka . . . . .	(4)	517
Leljak-Levanić, Dunja . . . . .	(2)	156	Policegoudra, Rudragoud S. . . . .	(2)	162
Lima, Danyo Maia . . . . .	(4)	424	Porto, André Luiz Meleiro . . . . .	(4)	460
Lin, Jiun-Tsai . . . . .	(1)	111	Porto, Maria Rita Alaniz . . . . .	(1)	103
Liu, Wen-Hsiung . . . . .	(1)	111	Proestos, Charalampos . . . . .	(2)	263
Loiseau, Gérard . . . . .	(2)	244	Qi, Wei . . . . .	(1)	96
Loto, Flavia . . . . .	(2)	187	Radeka, Sanja . . . . .	(2)	214
Lukić, Igor . . . . .	(2)	214	Radman, Miroslav. . . . .	(1)	134
Malhotra, Sarla P. . . . .	(4)	453	Radošević, Kristina . . . . .	(4)	447
Manca de Nadra, María Cristina . . . . .	(1)	83	Radva, Dániel . . . . .	(2)	257
Mauray, Stéphane . . . . .	(4)	435	Rajoka, Muhammad Ibrahim . . . . .	(4)	465
Memon, Muhammad Hafeez-ur-Rahman . . . . .	(4)	465	Ramírez-Coronel, Ma. Ascención . . . . .	(3)	352, 369, 374
Mendoza Zélis, Pedro . . . . .	(3)	347	Randriamahatody, Zo . . . . .	(1)	48
Mihajlović, Mirna . . . . .	(4)	447	Raspor, Peter . . . . .	(4)	474
Mihaljević, Snježana . . . . .	(2)	156	Revuelta, Mariana V. . . . .	(3)	347
Milala, Joanna . . . . .	(1)	40	Režek Jambrak, Anet . . . . .	(2)	196
Miličević, Borislav . . . . .	(2)	214	Ribeiro, Rita de Cássia L. Figueiredo . . . . .	(4)	424
Milić, Dinka . . . . .	(4)	517	Rodríguez-Serrano, Gabriela . . . . .	(3)	369
Morais Nunes, Gisele Fátima . . . . .	(3)	385	Rodríguez Vaquero, María José . . . . .	(1)	83
Morata, Vilma I. . . . .	(2)	187	Rojas, Natalia Lorena . . . . .	(3)	316
Moreau, Jacques . . . . .	(1)	48			
Morgunov, Igor G. . . . .	(1)	65			
Mrudula Vasudevan, Ushasree . . . . .	(3)	286, 304			
Mrša, Vladimir . . . . .	(1)	1			
Mrvčić, Jasna . . . . .	(1)	13			

Roussos, Sevastianos . . . . .	(3)	352, 369	Thomaz-Soccol, Vanete. . . . .	(3)	275, 277, 359
Rukavina, Ivana . . . . .	(4)	495	Tkalec, Mirta . . . . .	(1)	32
Sagoua, Woeheoudama . . . . .	(2)	244	Tomas, Srećko . . . . .	(2)	214
Salomskiene, Joana . . . . .	(4)	502	Torres-Mancera, María Teresa . . . . .	(3)	369, 374
Saman, Premsuda . . . . .	(1)	128	Tosi, Emanuele . . . . .	(4)	529
Sánchez, Francisco H. . . . .	(3)	347	Tran, Luyen Thi . . . . .	(1)	48
Sangvanich, Polkit . . . . .	(4)	489	Trontel, Antonija . . . . .	(1)	75
Santarelli, Marcela . . . . .	(3)	364	Tsaousi, Konstantina . . . . .	(3)	379
Saucedo-Castañeda, Gerardo . . . . .	(3)	352, 369, 374, 391	Tušek, Ana . . . . .	(4)	495
Sawasdipuksa, Narumon . . . . .	(4)	489	Uzelac, Lidija . . . . .	(2)	156
Schoenlein-Crusius, Iracema Helena . . . . .	(4)	460	Vahčić, Nada . . . . .	(4)	517
Sena, Amanda Reges de . . . . .	(4)	413	Vaiculyte-Funk, Lina . . . . .	(4)	502
Shah, Farman Ali . . . . .	(4)	465	Vale, Juliana Alves . . . . .	(4)	460
Shao, Jing . . . . .	(1)	96	Valentini, Sandro R. . . . .	(3)	329
Sharma, Nivedita . . . . .	(2)	169	Vázquez, José A. . . . .	(1)	128
Shukla, Rishikesh . . . . .	(3)	291	Velli, Asimina . . . . .	(3)	379
Shukla, Shraddha . . . . .	(3)	291	Veloso de Paula, Ariela . . . . .	(3)	385
Silva, Marcelo . . . . .	(3)	277	Vidmantiene, Daiva . . . . .	(4)	502
Silva, Roberto Da . . . . .	(3)	341	Vidya, Jalaja . . . . .	(3)	286
Silva Carvalho Filho, Marco Aurélio da . . . . .	(3)	277	Vorkapić-Furač, Jasna . . . . .	(1)	136
Simonato, Barbara . . . . .	(4)	529	Vulić, Ana . . . . .	(4)	517
Singh, Anshu . . . . .	(3)	322	Wang, Hai Kuan . . . . .	(1)	96
Singh, Lokendra . . . . .	(2)	162	Wang, Jing . . . . .	(4)	481
Slavica, Anita. . . . .	(1)	75	Wei, Yu Jie . . . . .	(1)	96
Slivac, Igor . . . . .	(4)	447	Yadav, Geetanjali . . . . .	(3)	322
Soccol, Carlos Ricardo . . . . .	(3)	275, 277, 286, 359, 364	Yadav, Praduman . . . . .	(4)	453
Spainol, János . . . . .	(2)	257	Yamaguishi, Caroline Tiemi . . . . .	(3)	364
Spier, Michele Rigon. . . . .	(3)	277	Yuan, Xiaoping . . . . .	(4)	481
Srećec, Siniša . . . . .	(1)	56	Zadro, Zvonko . . . . .	(4)	511
Stehlik-Tomas, Vesna . . . . .	(1, 2)	13, 271	Zaman, Khair . . . . .	(2)	205
Sugitani Chimilovski, Jacqueline . . . . .	(3)	359	Zapparoli, Giacomo . . . . .	(4)	529
Sumner, Lloyd W. . . . .	(4)	489	Zduńczyk, Zenon . . . . .	(1)	40
Sun, Baoguo . . . . .	(4)	481	Zechner-Krpan, Vesna . . . . .	(1)	56
Sylla, Khalifa Serigne Babacar . . . . .	(1)	48	Zelić, Bruno . . . . .	(4)	495
Šalić, Anita . . . . .	(4)	495	Zhang, Jie . . . . .	(1)	96
Šantek, Božidar . . . . .	(1)	75	Žižić, Vesna . . . . .	(4)	511
Špoljarić, Igor . . . . .	(1)	56			
Terrazas, Werner D. M. . . . .	(3)	329			

## SUBJECT INDEX

### A

#### [ABTS]<sup>+</sup>

for determination of antioxidant activity of hydroxycinnamic acids from coffee pulp extracts, 374

#### acid polygalacturonase

production of, from *Aspergillus kawachii* cloned in *S. cerevisiae*, 316

#### *Acinetobacter johnsonii*

strain LP28, for low-temperature alkaline lipase production, 96

#### activity staining

of dextransucrase activity, 297

#### adhesion

capability, of *Lactobacillus fermenti* 126 and *Lactobacillus rhamnosus* CCM 1825, 177

#### adsorption and cross-linking

the activity of enzyme after immobilization by, 257

#### aeration

as a parameter for high  $\alpha$ -amylase production, 336

#### alcoholic fermentation

removal of pyrimethanil and fenhexamid during, 474

#### alkaline lipase

production of, by *Acinetobacter johnsonii* strain LP28, 96

#### alloxan

for lipid peroxidation induction in mice, 481

#### Amarone wine

evaluation of the impact of *Botrytis cinerea* on the aroma components of, 529

#### Amberlite IRA-900

$\beta$ -glucosidase immobilization by adsorption and cross-linking on, 257

#### amensalism

the co-existence of mixed cultures of *Lactobacillus* sp., used for D- and L-lactic acid production on different carbon sources, 75

#### amylase

extraction and purification of, from *Aspergillus awamori* Nakazawa MTCC 6652, 310

production of, by *Bacillus amyloliquefaciens* using agro wastes as feed stock, 336

#### anthocyanins

influence of high intensity ultrasound and pasteurization on content of, in strawberry juice, 196

#### anthracnose

postharvest disease of banana caused by *Colletotrichum musae*, and its prevention by lactoperoxidase system, 244

#### antifungal activity

of lysozyme isolated from *Pithecellobium dulce* seed, 489

#### antimicrobial activity

of bacteriocin produced by *Bacillus subtilis* R75 on fermented chunks of mung bean, 169

of phenolic compounds extracted from five *Hypericum* species, 205

of *Filipendula ulmaria* extract against *Enterobacteriaceae*, Gram-positive and Gram-negative bacteria, 263

#### antioxidant activity

of ethanol extracts from fermented black soybean milk, 111

of mango ginger (*Curcuma amada*) rhizome extracts, 162

of phenolic compounds extracted from five *Hypericum* species, 205

#### antioxidants

in ethanol extracts of chicory root, peel, seed and leaf, 40

biochemistry and biotechnological production of betalains as, 145

hydroxycinnamic acids as, from coffee pulp, 369

hydroxycinnamic acids as, from fermented and nonfermented coffee pulp extracts, 374

#### antioxidative enzymes

measurement of, in horseradish (*Armoracia lapathifolia* Gilib.) tissues, 32

measurement of, in ber fruit (*Ziziphus mauritiana*) during ripening, 453

induction of, in *ex vivo* and *in vivo* systems by enzymatic hydrolysates from wheat bran, 481

#### antioxidative metabolites

in ber fruit (*Ziziphus mauritiana*) during ripening, 453

#### antitumour activity

of exopolysaccharides from *Grifola frondosa*, 359

#### apoptosis

of CHO-K1 cells, induced by 17 $\alpha$ -ethynylestradiol and diethylstilbestrol, 447

#### aqueous two-phase systems

polyphenol extraction using microchannel system in, 495

#### ascorbic acid

encapsulation of, in hydrophobic silica xerogel, 347

#### L-asparaginase II

cloning, functional expression and characterization of, produced by *E. coli* MTCC 739, 286

#### *Aspergillus awamori*

extraction and purification of amylase and protease from, produced in a single-stage fermentation, 310

#### *Aspergillus kawachii*

production of polygalacturonase from, cloned in *S. cerevisiae*, 316

#### *Aspergillus niger* phytase

cloning and expression of, in *E. coli appA*, 304

#### *Aspergillus terreus*

N-demethylation of N,N-dimethylbenzenamine and N,N,3-trimethylbenzenamine by, 460

## B

- Bacillus*  
isolation of, strains SC-G and SC-H from mature grape varieties, as producers of cold-active pectinases, 187
- Bacillus amyloliquefaciens*  
production of  $\alpha$ -amylase by, using agro wastes as feed stock, 336
- bacteriocin  
sensitivity of *Lactobacillus* sp. on, during production of D- and L-lactic acid in batch fermentation, 75  
purification and characterization of, produced by *Bacillus subtilis* R75 on fermented chunks of mung bean, 169
- batch fermentation  
for modelling of the growth of and D- and L-lactic acid production by *Lactobacillus* sp., 75
- beef  
the effect of cooking methods on the quality of, as determined by PCR-based methods, 523
- betacyanins  
biochemistry and biotechnological production of, as natural food colourants, 145
- betaxanthins  
biochemistry and biotechnological production of, as natural food colourants, 145
- beverages  
as a source of theobromine detected by RP-HPLC with UV detection, 413
- bioactive peptides  
analysis of the structure of, from food proteins using BIOPEP-PBIL tool, 118
- biodiesel production  
use of glycerol-containing waste from, as a substrate for citric acid production by *Yarrowia lipolytica* N15, 65
- bioinformatics  
for the analysis of the structure of active motifs from food proteins using BIOPEP-PBIL tool, 118
- biological fluids  
as a source of theobromine detected by RP-HPLC with UV detection, 413
- biomass  
optimization of the production of, using *Pichia pastoris* on glycerol as a carbon source, 329
- biopreservative  
properties of bacteriocin isolated from Indian fermented food dal vari, 169
- bioreactor  
 $\alpha$ -amylase production by *Bacillus amyloliquefaciens* in, using agro wastes as feed stock, 336
- biosurfactants  
isolation and characterization of, produced by *Lactobacillus fermenti* 126 and *Lactobacillus rhamnosus* CCM 1825, 177
- biotransformation  
of N-tertiary amines by whole cells of *Aspergillus terreus* strains, 460
- black soybean  
antioxidant and cytotoxic effects of extracts from fermented, 111

- Botrytis cinerea*  
evaluation of the impact of, on the aroma components of Amarone wine, 529
- botrytized wine  
content of fatty acids, fruity acetates and N-(3-methylbutyl) acetamide in, 529
- bovine colostrum  
quantification and identification of microflora from, 364
- brewer's spent grains  
for immobilization of psychrotolerant *S. cerevisiae* AXAZ-1, 379
- brewer's yeast  
as a source of particulate  $\beta$ -glucans, 56
- browning  
characterization of the lettuce enzymes responsible for, 249
- brown rice  
fermentability of, for growth of *Lactobacillus plantarum* NCIMB 8826 from human gut, 128
- by-products  
of hydrolysis of tuna, using Protamex protease, 48

## C

- caffeic acid  
increased amounts of, in transgenic *Coleus blumei* roots with high phenylalanine ammonia-lyase activity, 24
- canola oil  
optimization of interesterification of, and milk fat blends by *Rhizopus oryzae* lipase, 385
- carbohydrate metabolism  
influence of the abundance and activity of enzymes involved in, on carbohydrate profiles and differentiation states in sugar beet cell lines, 435
- carbon source  
glycerol used as, for optimal biomass and recombinant glycerol kinase production from *S. cerevisiae* cloned in *Pichia pastoris*, 329
- carboxymethylcellulose  
influence of, on physicochemical and sensorial properties of fried chicken nuggets, 237
- carvacrol  
antibacterial effect of, against heat-treated *Listeria monocytogenes*, 89
- cereal fermentability  
of rice-based media for growth of *Lactobacillus plantarum* NCIMB 8826, 128
- certification of conventional soybean seeds and grains  
application of PCR as highly sensitive method for, 277
- chicken nuggets  
physicochemical and sensorial properties of vegetable-based materials used as edible coating on, 237
- chlorogenic acid  
bioavailable gut microflora metabolite, from chicory ethanol extracts, 40
- CHO-K1 cells  
apoptosis of, induced by 17 $\alpha$ -ethynylestradiol and diethylstilbestrol, 447

- Cichorium intybus*  
 inulin and phenolic compounds in, 40  
 citric acid production  
 by *Yarrowia lipolytica* N15 on glycerol-containing waste from biodiesel industry, 65  
 clenbuterol  
 determination of, in pigs' urine by ELISA, 517  
 coeliac disease  
 suboptimal intake of folate and vitamin B<sub>12</sub> in patients with, 511  
 coffee pulp  
 optimization of extraction of hydroxycinnamic acids from, 352  
 enzymatic extraction of hydroxycinnamic acids from, 369  
 effect of mixing on the solid-state fermentation of, with *Aspergillus tamarii*, 391  
 cold-active enzymes  
 isolation and selection of psychrotolerant microorganisms producing, with pectinase activity, 187  
*Coleus blumei*  
 influence of phenylalanine ammonia-lyase overexpression in roots of, on growth and phenolic compound synthesis, 24  
*Colletotrichum musae*  
 antimicrobial activity of lactoperoxidase system against banana pathogen, 244  
 combined antimicrobial processes  
 of nisin, carvacrol and their mixtures on the growth of heat-treated *Listeria monocytogenes*, 89  
 cooking method  
 effect of, on the quality of beef meat determined by PCR-based methods, 523  
 co-substrate feeding  
 for polygalacturonase production from *Aspergillus kawachii* cloned in *S. cerevisiae*, 316  
 crown rot  
 prevention of, a postharvest disease of banana caused by *Colletotrichum musae*, by lactoperoxidase system, 244  
*Cucurbita pepo* L.  
 conditions for the production of extracellular glycoproteins in embryogenic culture of, 156  
*Curcuma amada* (mango ginger)  
 phenolic content, lipid peroxidation inhibitory activity, antioxidant activity and cytotoxicity of rhizome extracts of, 162  
 cytotoxic activity  
 of ethanol extracts from fermented black soybean milk, 111  
 cytotoxicity  
 of mango ginger (*Curcuma amada*) rhizome extracts, 162  
 of 17 $\alpha$ -ethynylestradiol and diethylstilbestrol on CHO-K1 cells, 447
- D**
- databases  
 of biologically active motifs from food proteins, 118
- N*-demethylation  
 of *N,N*-dimethylbenzenamine and *N,N,3*-trimethylbenzenamine by whole cells of *Aspergillus terreus*, 460  
 detection of transgenic soybean  
 by PCR technique, 277  
 detergent formulation  
 containing low-temperature alkaline lipase from *Acinetobacter johnsonii* strain LP28, 96  
 dextran  
 synthesis of, by dextransucrase from *Leuconostoc mesenteroides* NRRL B-1149, 291  
 dextransucrase  
 produced by *Leuconostoc mesenteroides* NRRL B-1149, 291  
 purification and characterization of, from *Pediococcus pentosaceus* from the soil, 297  
 diethylstilbestrol  
 cytotoxic effect of, on CHO-K1 cells, 447  
 differentiation  
 influence of enzymes involved in carbohydrate metabolism on, of sugar beet cell lines, 435  
 DNA  
 as a determinant of beef meat quality subjected to different cooking methods, 523
- E**
- Eau Activée®  
 antimicrobial properties of, against banana pathogen *Colletotrichum musae*, 244  
 edible coating  
 physicochemical and sensorial properties of, on chicken nuggets, 237  
 effect of mixing  
 of coffee pulp with *Aspergillus tamarii*, 391  
*Enterobacteriaceae*  
 inhibition of adhesion of, by biosurfactants produced by *Lactobacillus fermenti* 126 and *Lactobacillus rhamnosus* CCM 1825, 177  
 enthalpy/entropy  
 values of, of invertase activation, produced by a double mutant derivative of *Kluyveromyces marxianus*, 465  
 enzymatic hydrolysates  
 from wheat bran, as lipid peroxidation inhibitors, 481  
 enzymatic properties  
 of L-asparaginase II produced by *E. coli* MTCC 739, 286  
 enzymatic synthesis  
 optimization of, of ethyl butyrate, by response surface methodology approach, 103  
 enzyme immobilization  
 effect of reaction parameters on, and enzyme activity, 257  
 enzyme-linked immunosorbent assay (ELISA)  
 used for ractopamine and clenbuterol determination in pigs' urine, 517  
*Escherichia coli*  
 as a model organism for adaptive evolution investigations, 13

esterification  
 of ethanol and butyric acid for ethyl butyrate production by response surface methodology, 103

ethyl butyrate  
 optimization of synthesis of, by response surface methodology using immobilized lipase, 103

17 $\alpha$ -ethynylestradiol  
 cytotoxic effect of, on CHO-K1 cells, 447

evolution  
 of microorganisms, as a response to starvation stress in stationary-phase of growth, 13

evolutionary operation (EVOP)  
 for analysis of aqueous two-phase extraction of polyphenols by microchannel system, 495

exopolysaccharides  
 production of, from *Grifola frondosa* by submerged fermentation, 359

experimental design  
 for optimization of interesterification of milk fat and canola oil blends by *Rhizopus oryzae* lipase, 385

extracellular glycoproteins  
 conditions for the production of, in embryogenic culture of pumpkin (*Cucurbita pepo* L.), 156

extraction  
 of glucoamylase and protease from *Aspergillus awamori* Nakazawa MTCC 6652 in a single-stage fermentation, 310

extruded wheat material  
 the impact of novel fermented products containing, on the quality of wheat bread, 502

**F**

fed-batch culture  
 production of polygalacturonase from *Aspergillus kawachii* cloned in *S. cerevisiae* in, 316

fenhexamid  
 removal of, during alcoholic fermentation in batch system with *S. cerevisiae*, 474

fermentation temperature  
 influence of, on secondary aroma compounds in grape marc distillates, 214

fermented products  
 the number of lactic acid bacteria in, on wheat bread quality, 502

fermentor  
 $\alpha$ -amylase production in, by *Bacillus amyloliquefaciens* using agro wastes as feed stock, 336

feruloyl esterases  
 production of, in solid-state fermentation by *Aspergillus tamaris* V12307 on extracted coffee pulp, 352

*Filipendula ulmaria*  
 antimicrobial effect of, against foodborne and spoilage bacteria in fish, 263

fish  
 prevention of spoilage of, by *Filipendula ulmaria* extract, 263

fish protein hydrolysates  
 as a source of soluble and digestible proteins, 48

folate intake  
 homocysteine as metabolic marker of, in coeliac patients adhering to a gluten-free diet, 511

food colourants  
 betalains as, 145

food of animal origin  
 optimization of processing and quality control of, using proteomic methodology, 397

fortified food  
 encapsulation of ascorbic acid for, 347

fructooligosaccharides  
 as a source for fructose production, 424

fructose  
 properties of, within the scope of a biotechnological approach, 424

FTIR  
 used for insoluble dextran characterization, 291

functional expression  
 of L-asparaginase II from *E. coli* MTCC 739, 286

## G

gallic acid  
 as a model solution for aqueous two-phase extraction of polyphenols, 495

$\beta$ -1,3-glucanase  
 production of, on *Agaricus blazei* extract as a substrate for *Trichoderma harzianum* Rifai, 341

$\beta$ -glucosidase  
 efficiency of immobilization of, 257

gluten-free diet  
 influence of, on folate and B<sub>12</sub> intake in coeliac patients, 511

glycerol  
 from biodiesel industry used as a substrate for citric acid production by *Yarrowia lipolytica* N15, 65

glycerol-containing waste  
 from biodiesel industry used as a substrate for citric acid production by *Yarrowia lipolytica* N15, 65

grape marc distillates  
 influence of variety and production technology on secondary aroma compounds in, 214

*Grifola frondosa*  
 antitumour activity of exopolysaccharides produced by submerged fermentation of, 359

growth advantage in stationary phase  
 of *Escherichia coli* mutants with increased fitness, 13

growth inhibition  
 of lactic acid bacteria in low-pH medium, described by unstructured models, 3

## H

heterologous expression  
 of polygalacturonase gene from *Aspergillus kawachii* cloned in *S. cerevisiae*, 316

high intensity ultrasound  
 effect of, on anthocyanin content in strawberry juice, 196

homocysteine  
 as metabolic marker of folate and B<sub>12</sub> intake in  
 coeliac patients adhering to a gluten-free diet, 511

hormone-free medium  
 for the reduction of the extracellular glycoproteins  
 in embryogenic culture of pumpkin (*Cucurbita pepo*  
 L.), 156

horseradish (*Armoracia lapathifolia* Gilib.)  
 measurement of antioxidative enzymes in, grown  
*in vitro* as a measure of oxidative stress, 32

hydrophobic silica xerogel  
 ascorbic acid encapsulation in, 347

hydroxycinnamic acids  
 optimization of extraction of, from coffee pulp, 352  
 enzymatic extraction of, from coffee pulp, 369  
 extraction, detection and antioxidant activity of,  
 from fermented and nonfermented coffee pulp  
 extracts, 374

*Hypericum choisianum*  
 antioxidant and antimicrobial activities of phenolic  
 compounds from, 205

*Hypericum dyeri*  
 antioxidant and antimicrobial activities of phenolic  
 compounds from, 205

*Hypericum monogynum*  
 antioxidant and antimicrobial activities of phenolic  
 compounds from, 205

*Hypericum oblongifolium*  
 antioxidant and antimicrobial activities of phenolic  
 compounds from, 205

*Hypericum perforatum*  
 antioxidant and antimicrobial activities of phenolic  
 compounds from, 205

## I

immobilization  
 of psychrotolerant yeast strain *S. cerevisiae* AXAZ-1  
 on delignified brewer's spent grains, 379

indicator bacteria  
 antimicrobial activity determination of bacteriocin  
 from Indian food del vari against, 169

inducer concentration  
 used for *Aspergillus niger* phytase gene cloning and  
 expression, in *E. coli appA*, 304

inhibitors  
 of deteriorative enzymes (polyphenol oxidase,  
 peroxidase and lipoxygenase) from lettuce, 249

insoluble dextran  
 synthesis of, by dextransucrase from *Leuconostoc*  
*mesenteroides* NRRL B-1149, in the presence of  
 maltose, 291

interesterification  
 optimization of, of milk fat and canola oil blends  
 by *Rhizopus oryzae* lipase, 385

inulin  
 mass fraction of, in ethanol extracts of chicory  
 root, peel, seed and leaf, 40

invertase  
 activity of, on the cell wall of different sugar beet  
 cell lines, 435

production optimization of, produced by a double  
 mutant derivative of *Kluyveromyces marxianus*, 465

isoenzyme pattern  
 increased number of peroxidase isoenzymes  
 forming, in tumour tissues of horseradish, 32

isoflavone  
 from fermented black soybean milk, as antioxidant  
 and cytotoxic agent, 111

## K

kinetic desorption method  
 determination of the effect of reaction parameters  
 on  $\beta$ -glucosidase immobilization by adsorption and  
 cross-linking with, 257

kinetics  
 of exopolysaccharides from *Grifola frondosa*  
 production by submerged fermentation, 359

*Kluyveromyces marxianus*  
 double mutant derivative of, strain M15, used for  
 production and thermal characterization of  
 invertase, 465

## L

L-(+)-and/or D(-)-lactic acid  
 production of, in batch fermentation on different  
 carbon sources by mono- and mixed *Lactobacillus*  
 sp. cultures, 75

lactic acid bacteria (LAB)  
 a review of unstructured models for fermentation  
 of, 3  
 number of, in spontaneous rye sourdough  
 containing extruded wheat material, 502

*Lactobacillus* sp.  
 mono- and mixed cultures of, for D- and L-lactic  
 acid production on different carbon sources, 75  
 adhesive capability of two strains of, and  
 functional properties of their biosurfactants, 177

*Lactobacillus plantarum*  
 growth of, strain NCIMB 8826 from human gut,  
 on different rice-based media, 128

lactoperoxidase system (LPS)  
 antimicrobial effect of, on banana pathogen  
*Colletotrichum musae*, 244

lettuce  
 characterization of deteriorative enzymes  
 polyphenol oxidase, peroxidase and lipoxygenase  
 from, 249

*Leuconostoc mesenteroides* NRRL B-1149  
 dextran synthesis by dextransucrase from, in the  
 presence of maltose, 291

LH-PCR  
 for identification of microflora from bovine  
 colostrum, 364

lignocellulose  
 production of xylanase for degradation of, by  
*Aspergillus flavus* DFR-6, 228

lipid peroxidation  
 inhibition of, in *ex vivo* and *in vivo* systems by  
 enzymatic hydrolysates from wheat bran, 481

- lipoygenase  
concentration-reaction rate, thermal stability, pH activity and inhibition of, from lettuce, 249
- Listeria monocytogenes*  
antibacterial effect of phenolic compounds against, in meat model, 83  
influence of nisin, carvacrol and their mixtures on the growth of, 89
- liver microsome  
inhibition of lipid peroxidation in, by enzymatic hydrolysates from wheat bran, 481
- low-density lipoprotein  
inhibition of oxidation of, by enzymatic hydrolysates from wheat bran, 481
- low temperature  
isolation and selection of psychrotolerant microorganisms producing cold-active pectinases at, 187
- low-temperature lipase  
from *Acinetobacter johnsonii* strain LP28, as an additive in detergent formulation, 96
- lysozyme  
isolation of, from *Pithecellobium dulce* seed, with antifungal activity, 489
- M**
- mango ginger (*Curcuma amada*)  
phenolic content, lipid peroxidation inhibitory activity, antioxidant activity and cytotoxicity of rhizome extracts of, 162
- mathematical model  
of D- and L-lactic acid production by mono- and mixed *Lactobacillus* sp. cultures on different carbon sources, 75
- meat  
preservation of, against *Listeria monocytogenes* by phenolic compound mixtures, 83
- medicinal mushrooms  
for production of  $\beta$ -1,3-glucanase, 341
- medium optimization  
for invertase production from a double mutant derivative of *Kluyveromyces marxianus* M15, 465
- microextractor  
for total phenol two-phase extraction from white wine, 495
- microflora identification  
from bovine colostrum through 16S rRNA gene sequencing and LH-PCR techniques, 364
- microorganisms  
production of inulinases by, 424
- milk fat  
optimization of interesterification of, and canola oil blends by *Rhizopus oryzae* lipase, 385
- mixed culture  
of *Lactobacillus* sp. for D- and L-lactic acid production on different carbon sources, 75
- molasses  
use of soy, as carbon source for *Grifola frondosa* exopolysaccharide production, 359
- monoculture  
of *Lactobacillus* sp. for D- and L-lactic acid production on different carbon sources, 75
- multifactor plan of experiments  
for the optimization of polyphenol two-phase extraction process, 495
- N**
- natural antimicrobials  
use of, against foodborne bacteria in fish, 263
- natural antioxidants  
process optimization for the extraction of polyphenols as, from okara, 322
- necrosis  
of CHO-K1 cells, induced by 17 $\alpha$ -ethynylestradiol and diethylstilbestrol, 447
- nisin  
antibacterial effect of, against heat-treated *Listeria monocytogenes*, 89
- nitrogen recovery  
in the soluble fraction of tuna by-product hydrolysates, 48
- nitrogen sources  
as limitators of extracellular glycoprotein excretion from the cells of embryogenic culture of pumpkin (*Cucurbita pepo* L.), 156
- noble rot  
evaluation of the impact of *Botrytis cinerea* on the aroma components of Amarone wine, 529
- nuclear magnetic resonance (NMR)  
used for insoluble dextran characterization, 291  
used for sugar beet cell line analysis, 435
- nutritional limitations  
of nitrogen and carbon as a cause of cessation of growth of lactic acid bacteria, 3
- O**
- oil-binding capacity  
of particulate  $\beta$ -glucans isolated from spent brewer's yeast, 56
- okara  
optimization of the process of extraction of polyphenolics from, 322
- olive oil  
as an inducer of the feruloyl esterase activity, 369
- optimization  
of ethyl butyrate production by response surface methodology approach, 103  
of conditions for xylanase production by *Aspergillus flavus* DFR-6, 228
- overexpression  
of phenylalanine ammonia-lyase in *Coleus blumei* transgenic roots, 24
- oxidative stress  
in horseradish tissues as a cause of inability of teratoma tissue to regenerate plantlets with normal morphology, 32  
measurement of the parameters of, in ber fruit (*Ziziphus mauritiana*) during ripening, 453

## P

- packaging  
of ascorbic acid-fortified food for controlled release, 347
- particulate  $\beta$ -glucan  
rheological properties, water-holding and oil-binding capacity of, from spent brewer's yeast, 56
- pathogens  
antimicrobial activity of *Filipendula ulmaria* extract against, from fish, 26
- pectinase  
isolation and selection of psychrotolerant microorganisms producing cold-active, 187
- Pediococcus pentosaceus*  
as a source of dextranucrase, isolated from the soil, 297
- peroxidase  
concentration-reaction rate, thermal stability, pH activity and inhibition of, from lettuce, 249
- phenolic compounds  
mass fraction of, in ethanol extracts of chicory root, peel, seed and leaf, 40  
antibacterial effect of, against *Listeria monocytogenes* in brain heart infusion medium, 83  
antioxidant and antimicrobial activities of, from five *Hypericum* species, 205
- phenolics  
synthesis of, in the roots of transgenic *Coleus blumei* with overexpressed phenylalanine ammonia-lyase, 24  
content of, in mango ginger (*Curcuma amada*) rhizome extracts, 162
- phenylalanine ammonia-lyase  
influence of overexpressed, on growth and phenolic synthesis in *Coleus blumei* roots, 24
- Pichia pastoris*  
optimization of the biomass and recombinant glycerol kinase production by, 329
- pig  
determination of ractopamine and clenbuterol in urine of, by ELISA as a quantitative screening method, 517
- pigment and polyphenol extraction  
from Malbec grapes by natural extraction and cold-active pectinase preparation, 187
- pigments  
production of betalains from red beet as food colourants with antioxidative properties, 145
- Pithecellobium dulce*  
isolation of lysozyme with antifungal activity from, 489
- plants  
as a source of theobromine detected by RP-HPLC with UV detection, 413
- platelet aggregation inhibitory activity  
of mango ginger (*Curcuma amada*) rhizome extracts, 162
- polyethylene glycol  
used for purification of dextranucrase isolated from *Pediococcus pentosaceus*, 297
- polymerase chain reaction (PCR)  
for detection of Round Ready<sup>TM</sup> soybean seeds and grains, 277  
detection of the effect of cooking on the quality of beef meat, 523
- polyphenol oxidase  
concentration-reaction rate, thermal stability, pH activity and inhibition of, from lettuce, 249
- polyphenolics  
optimization of the process of extraction of, from okara, 322
- polyphenols  
aqueous two-phase extraction of, by microchannel system, 495
- postharvest diseases  
prevention of, in banana by lactoperoxidase system, 244
- probiotic bacteria  
growth of, isolated from human gut, on different rice-based media, 128
- probiotic microorganisms  
quantification and identification of, from bovine colostrum, 363
- processing  
optimization of, of food of animal origin, 397
- production technology  
influence of, on secondary aroma compounds in grape marc distillates, 214
- prolonged stationary phase  
as a tool for microbial adaptive evolution determination, 13
- protease  
extraction and purification of, from *Aspergillus awamori* Nakazawa MTCC 6652 produced in a single-stage fermentation, 310
- proteins  
analysis of the structure of biologically active motifs derived from, 118
- proteolysis  
of yellowfin tuna by-products by Protamex protease, 48
- proteomics  
use of, in optimization of processing and quality control of food of animal origin, 397
- pumpkin (*Cucurbita pepo* L.)  
conditions for extracellular glycoprotein production in embryonic culture of, 156
- purification  
of bacteriocin produced by *Bacillus subtilis* R75 on fermented chunks of mung bean, 169  
of glucoamylase and protease from *Aspergillus awamori* Nakazawa MTCC 6652 in a single-stage fermentation, 310  
of invertase produced by double mutant derivative of *Kluyveromyces marxianus* by precipitation, 465
- pyrimethanil  
removal of, during alcoholic fermentation in batch system with *Saccharomyces cerevisiae*, 474

## Q

quality control  
 optimization of, of food of animal origin using proteomic methodology, 397

## R

ractopamine  
 determination of, in pigs' urine by ELISA as a quantitative screening method, 517

rat  
 determination of biological properties of non-inulin chicory ethanol fractions on, 40

reactors  
 for commercial betalain production, 145

recombinant *appA*  
 expression of, in *E. coli* BL21 pLysS as a host, 304

recombinant glycerol kinase  
 production of, from *S. cerevisiae*, by *Pichia pastoris*, 329

red beet  
 biotechnological production of betalains from, 145

response surface methodology  
 determination of stability parameters of anthocyanins by, in strawberry juice during ultrasound processing, 196  
 optimization of the polyphenol extraction from okara, 322  
 optimization of biomass and recombinant glycerol kinase production from *S. cerevisiae* cloned in *Pichia pastoris*, 329  
 optimization of  $\beta$ -1,3-glucanase production on *Agaricus blazei* extract as a substrate for *Trichoderma harzianum* Rifai, 341  
 optimization of interesterification of milk fat and canola oil blends by *Rhizopus oryzae* lipase, 385

reversed phase high-performance liquid chromatography (RP-HPLC)  
 with UV detection, for theobromine analysis, 413

rheology  
 of particulate  $\beta$ -glucans from spent brewer's yeast, 56

*Rhizopus oligosporus*  
 black soybean milk fermented by, strain NTU5, 111

*Rhizopus oryzae* lipase  
 optimization of interesterification of milk fat and canola oil blends by, 385

rice bran  
 fermentability of, for growth of *Lactobacillus plantarum* NCIMB 8826 from human gut, 128

rosmarinic acid  
 synthesis of, in the roots of transgenic *Coleus blumei* with overexpressed phenylalanine ammonia-lyase, 24

Round Ready™ (RR™) soybean  
 detection of, in varietal mixtures of seeds and grains by PCR, 277

## S

16S rRNA  
 for identification of microflora from bovine colostrum, 364

*Saccharomyces cerevisiae*  
 removal of pyrimethanil and fenhexamid during alcoholic fermentation in batch system with, 474

SDS-PAGE  
 for molecular mass determination of dextranase from *Pediococcus pentosaceus* isolated from the soil, 297

secondary aroma compounds  
 influence of variety and production technology on, in fresh grape marc distillates, 214

seed protein  
 isolation of, from *Pithecellobium dulce*, with antifungal activity, 489

SEM  
 used for insoluble dextran characterization, 291

solid-state fermentation  
 for production of feruoyl esterases by *Aspergillus tamarii* V12307 on extracted coffee pulp, 352  
 for production of feruoyl esterases using olive oil or coffee pulp as an inducer, 369  
 of coffee pulp by *Aspergillus tamarii*, 374  
 effect of mixing of coffee pulp with *Aspergillus tamarii* during, 391

solvent extractions  
 optimization of conditions for, of hydroxycinnamic acids from coffee pulp, 352

somatic embryogenesis  
 of pumpkin somatic cells, for embryogenic culture constitution, 156

soy protein isolate  
 use and characteristics of, as the first coating for chicken nuggets, 237

soybean  
 use of waste from the production of, as a source of polyphenolics, 322

species identification  
 the use of DNA-based methods for, of animal tissues in meat products, as affected by cooking methods, 523

spoilage  
 prevention of, of fish, by *Filipendula ulmaria* extract, 263

statistical design  
 for identification and optimization of critical medium for xylanase production by *Aspergillus flavus* DFR-6, 228

strawberry juice  
 influence of high intensity ultrasound and pasteurization on content of anthocyanins in, 196

submerged culture  
 production of *Grifola frondosa* exopolysaccharides in, 359

submerged fermentation  
 xylanase production by *Aspergillus flavus* DFR-6 in, 228  
 $\alpha$ -amylase production in, by *Bacillus amyloliquefaciens* using agro wastes as feed stock, 336

sucrose synthase  
activity of, influenced by the accumulation of intracellular carbohydrates in different sugar beet cell lines, 435

swelling  
of particulate  $\beta$ -glucans isolated from spent brewer's yeast by different methods, 56

synergistic effect  
of phenolic compound mixtures against *Listeria monocytogenes*, 83

synthetic media  
fungicide removal by *S. cerevisiae* during alcoholic fermentation in, 474

syrup  
production and properties of fructose, used as sweetener, 424

## T

tertiary aromatic amines  
oxidative *N*-demethylation of, by *Aspergillus terreus* strains, 460

theobromine  
analysis of, by RP-HPLC with UV detection, 413

thermal drying  
of delignified brewer's spent grains with immobilized psychrotolerant yeast strain *Saccharomyces cerevisiae* AXAZ-1, 379

thermostability  
of invertase produced by double mutant of *Kluyveromyces marxianus*, 465

tissue culture  
horseradish, as a model for investigation of the influence of oxidative stress on tissue differentiation, 32

transgenic roots  
of *Coleus blumei* with overexpressed phenylalanine ammonia-lyase, 24

*Trichoderma harzianum* Rifai  
production of  $\beta$ -1,3-glucanase by, on *Agaricus blazei* extract, 341

tumour tissue  
obtained by infection of horseradish leaves with *Agrobacterium tumefaciens*, 32

tuna  
enzymatic hydrolysis of by-products of, using Protamex protease, 48

## U

unstructured models  
for description of the production of lactic acid and growth of LAB, 3

urine  
determination of ractopamine and clenbuterol in the pigs', by ELISA as a quantitative screening method, 517

## V

variety  
influence of, on secondary aroma compounds in grape marc distillates, 214

vitamin B<sub>12</sub>  
intake of, in coeliac patients adhering to a gluten-free diet, 511

## W

water-holding capacity  
of particulate  $\beta$ -glucans isolated from spent brewer's yeast by different methods, 56

wheat bran  
inhibition of lipid peroxidation by enzymatic hydrolysates from, 481

wheat bread  
quality of, produced by novel fermented products containing extruded wheat material, 502

wine aroma  
changes in, influenced by botrytized berry percentage, 529

winemaking  
using psychrotolerant yeast strain *S. cerevisiae* AXAZ-1 immobilized on delignified brewer's spent grains, 379

## X

xylanase  
optimization of production of, by *Aspergillus flavus* DFR-6, 228

## Y

*Yarrowia lipolytica*  
for production of citric acid on glycerol-containing waste from biodiesel industry, 65

## Z

zein  
use and characteristics of, as the first coating for chicken nuggets, 237

*Ziziphus mauritiana*  
oxidative and antioxidative stress during ripening of, 453