

Isolation Of Lipase Producing Bacteria And Determination

Aimed at research scientists and biotechnologists, this book is an essential reading for those working with extremophiles and their potential biotechnological application. Here, we provide a comprehensive and reliable source of information on the recent advances and challenges in different aspects of the theme. Written in an accessible language, the book is also recommended as reference text for anyone interested in this thriving field of research. Over the last decades, the study of extremophiles has provided ground breaking discoveries that challenge our understanding of biochemistry and molecular biology. In the applied side, extremophiles and their enzymes have spawned a multibillion dollar biotechnology industry, with applications spanning biomedical, pharmaceutical, industrial, environmental, and agricultural sectors. Taq DNA polymerase (which was isolated from *Thermus aquaticus* from a geothermal spring in Yellowstone National Park) is the most well-known example of the potential biotechnological application of extremophiles and their biomolecules. Indeed, the application of extremophiles and their biologically active compounds has opened a new era in biotechnology. However, despite the latest advances, we are just in the beginning of exploring the biotechnological potentials of extremophiles.

It also contains formulations and uses of media for isolation, culture, identification, and maintenance of microorganisms. The entries are arranged alphabetically by medium name and include synonyms, sources, and more. This reference contains the most comprehensive compilation of microbiological media available in a single volume. The only resou

Lipases are serine hydrolases that catalyze both the hydrolysis and synthesis of insoluble or poorly soluble long-chain triacylglycerols with an acyl chain length ≥ 10 carbon atoms based on the presence or absence of water. Lipases are produced and secreted by all kingdoms of life that are eukaryotes including plants, animals, fungi and prokaryotes including bacteria and archaea. However, microbial lipases, especially from bacteria, more useful than their plant and animal derivatives because of several important properties. Because of their activities in both aqueous and nonaqueous environments, lipases have specific applications in industry and medicine. The primary goals of this thesis were to clone and express the extra-cellular lipase gene from *Pseudomonas* sp. KE38, isolated from soil samples of Erciyes mountain in Kayseri, in *E. coli* and partial purification of the gene product. To achieve this aim, genome walking technique was used to obtain lipase gene from *Pseudomonas* sp. KE38, that gene was then cloned into pET28a expression vector and expressed in *E. coli*. The lipase expression of *E. coli* BL21 and its activity was screened with olive oil-Rhodamin B plate assay. After expression recombinant lipase was partially purified via inclusion body isolation. Moreover the optimum lipase production time of *E. coli* BL21 cells were determined and analyzed with SDS-PAGE. According to SDS-PAGE analysis the recombinant lipase was approximately 64 kDa and lipase production reached to the highest level after two hours of IPTG induction. As conclusion, recombinant lipase from *Pseudomonas* sp. KE38 was cloned into *E. coli*, expressed and partially purified.

This edited work presents useful methods in experimenting in the area of Bioprocessing and Biotechnology. The four sections cover the area of Bioprocess, Whole Cells & Isolated Biocatalyst, Characterization of Biochemical Products and Cell Isolation & Culture. Its enable researchers to choose a suitable method and plan their experiments in details. The main focus of this book is to provide step by step method to young researchers, especially in the new research areas. Among the latest areas are the isolation of novel strain or enzyme by metagenomic approaches and taming procedure in the laboratories, development of novel, the cheap and non-toxic catalyst for biodiesel production, and production of micro-fibrillated cellulose. An updated method for well-known areas such as immobilization technology, biosensor, and polymerization was also presented. The book also covers in-silico methods such as MATLAB platform to ease researchers. Not to forget, the method in animal and plant culture is also discussed in detail. The book is written by chapter authors with much expertise in their fields. They have published multiple articles in the index listed journals. The topic of this book is particularly relevant to young researchers who are struggling to fine-tune their research and do not want to waste their time in optimizing the experiment set up.

Lipases and pectinases are industrially important enzymes. These enzymes are produced by a variety of microorganisms. However there are few studies on the production of these enzymes by thermoacidophilic *Bacillus* species. The aim of this research was the isolation of extracellular lipase and pectinase producing thermoacidophilic *Bacillus* from olive oil mills and their identification by phenotypic tests, 16S-ITS rDNA RFLP and DNA sequencing. Eighty-six thermoacidophilic strains were isolated from olive, olive husk and soil contaminated with alpechin collected within different olive oil mills in Ayvalık. The strains were screened for the presence of 5 extracellular enzyme activities. These were lipase, pectinase, amylase, xylanase and cellulase. In total, 69 lipase (Tween 20 as substrate), 32 pectinase and 68 amylase activities were detected. None of the isolates were able to produce xylanase or cellulase enzyme. All of the isolates were Gram(+) endospore forming rods, thus they were identified as *Bacillus* sp. Taq I was used for 16S-ITS rDNA based RFLP. The isolated strains were clustered into four groups by Taq I restriction profiles of 16S-ITS rDNA. One representative isolate among the members of each of the 16S-RFLP homology groups was chosen and used for 16S rRNA gene partial sequence analysis. Sequencing results were submitted to GenBank. So far the indicated accession numbers were obtained: AY601903 (isolate H 22 of G-3, 679 nucleotides), AY606276 (isolate S1 of G1, 330 nucleotides)

Comparison of Enrichment Techniques for Isolation of Lipase-producing Bacteria Isolation and Optimization of Lipase Producing Bacteria LAP Lambert Academic Publishing

Staphylococci are pathogenic bacteria known to cause diseases among different organisms including human. The two species *Staphylococcus aureus* and *Staphylococcus epidermidis* are well defined in human diseases although their exact mechanism of pathogenesis is still not fully understood. These pathogenic bacteria could be isolated from soil, water, air, as well as from the living organisms and they are both pathogenic and saprophytic. Extracellular enzymes of the organisms are used for the industrial purposes. The isolation and characterization of these enzymes are crucial steps in biotechnology. The extracellular enzymes derived from the bacteria serve for many purposes in the industry. In this project 128 *Staphylococcus* sp. were used. Of these 128 bacteria, 12 were isolated from patients, 40 were isolated from the food handlers hygiene detections, 27 were isolated from pigeons and 49 of them were reference strains. They were searched for the presence of some of the industrially important extracellular enzymes: protease, lipase, cellulase, xylanase, amylase, laccase, urease, DNase and pectinase with biochemical tests. They were also searched for the presence of the lipase, protease and thermonuclease amplifications by PCR. The bacteria apart from the reference strains were also tried to be identified by 16S-ITS-rRNA RFLP analysis. The results would indicate the extracellular enzyme production among these pathogenic bacteria and would also be used as a guide in further studies to correlate between Staphylococcal pathogenicity and enzyme production.

This book offers the latest scientific research on applied microbiology presented at the IV International Conference on Environmental, Industrial and Applied Microbiology (BioMicroWorld2011) held in Spain in 2011. A wide-ranging set of topics including agriculture, environmental, food, industrial and medical microbiology makes this book interesting not only for microbiologists, but also for anyone who likes to keep up with cutting-edge research in microbiology and microbial biotechnology. Readers will find a major collection of knowledge, approaches, methods and discussions on the latest advances and challenges in applied microbiology in a compilation of 136 chapters written by active researchers in the field from around the world. The topics covered in this single volume include biodegradation of pollutants, water, soil and plant microorganisms, biosurfactants,

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antimicrobial natural products, antimicrobial susceptibility, antimicrobial resistance, human pathogens, food microorganisms, fermentation, biotechnologically relevant enzymes and proteins, microbial physiology, metabolism and gene expression mainly, although many other subjects are also discussed. Sample Chapter(s) A microcosm study on the die-off response of the indicator bacteria, *Enterococcus faecium* and *Enterococcus faecalis* (267 KB) Contents: Agriculture, Soil, Environmental and Marine–Aquatic Microbiology Food Microbiology Industrial Microbiology. Methods. Quantitative Models and Bioinformatics Medical and Pharmaceutical Microbiology. Antimicrobial Agents and Chemotherapy Microbial Physiology, Metabolism and Gene Expression Biotechnologically Relevant Enzymes and Proteins Readership: Professionals, microbiologists, clinicians, (bio)chemists, physicists, and engineers. Keywords: Microorganisms; Applied Microbiology; Environmental Microbiology; Industrial Microbiology; Microbial Biotechnology; BioMicroWorld2011 Conference Proceedings Book; Mendez-Vilas Key Features: The topics covered in this single volume include biodegradation of pollutants, water, soil and plant microorganisms, biosurfactants, antimicrobial natural products, antimicrobial susceptibility, antimicrobial resistance, human pathogens, food microorganisms, fermentation, biotechnologically relevant enzymes and proteins, microbial physiology, metabolism and gene expression mainly, although many other subjects are also discussed. Microbial lipases are industrially important and have gained attention due to their stability, selectivity, and broad substrate specificity. Lipases are used as medicine, and they also aid in indigestion, heartburn, allergy to gluten in wheat products (celiac disease), Crohn's disease, and cystic fibrosis. This volume considers the industrial demand for new sources of lipases with different catalytic characteristics that stimulate the isolation, growth, and development of new microbial strains. The volume narrates the challenging metagenomic approach with the isolation of the lipase gene, its cloning into *Escherichia coli*, culture of the recombinant bacteria, and extraction and assessment of the lipase enzyme. Lipase-producing bacteria are available in different habitats, such as industrial wastes, vegetable oil processing factories, dairy plants, and soils contaminated with oil and oil seeds, among others. This volume is the effort of the authors to document the scientific findings carried out over the last eight years in the area of un-culturable soil microorganisms. The book presents the physico-chemical features of lipases and their specific applications in different commercial industries. The in-depth study looks at metagenomics for lipases from all angles and provides a truly informative resource. It describes the biochemical characterization of lipase enzymes with the high activity in the presence of 1% tributyrin. A wide review has been presented in the book on lipase enzymes purified from a large collection of microbes present in soil, seawater, waste-dumping sites, animal systems (including human beings), and the atmosphere. Stability of enzymes over changing environments of the industry is indeed a big issue, and the book deals at length with the changing temperatures and pH and metal ion concentrations.

Microorganisms are an integral part of the fermentation process in food products and help to improve sensory and textural properties of the products. As such, it is vital to explore the current uses of microorganisms in the dairy industry. *Microbial Cultures and Enzymes in Dairy Technology* is a critical scholarly resource that explores multidisciplinary uses of cultures and enzymes in the production of dairy products. Featuring coverage on a wide range of topics such as dairy probiotics, biopreservatives, and fermentation, this book is geared toward academicians, researchers, and professionals in the dairy industry seeking current research on the major role of microorganisms in the production of many dairy products.

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Microorganisms Are Living Things Like Plants And Animals But Because Of Their Minute Size And Omnipresence, Performing Experiments With Microbes Requires Special Techniques And Equipment Apart From Good Theoretical Knowledge About Them. This Easy To Use Revised And Updated Edition Provides Knowledge About All The Three I.E., Techniques, Equipment And Principles Involved. The Notable Feature Of This Edition Is The Addition Of New Sections On Bacterial Taxonomy That Deals With The Criteria Used In Identification, Phylogeny And Current System Of Classification Of Prokaryotes Based On The Second Edition Of Bergey Manual Of Systematic Bacteriology And The Section One On History Of Discovery Of Events That Covers Chronologically Important Events In Microbiology With The Contribution Of Pioneer Microbiologists Who Laid The Foundation Of The Science Of Microbiology. In The Subsequent Twenty-Two Sections, Various Microbiological Techniques Have Been Described Followed By Several Experiments Illustrating The Properties Of Microorganisms And Highlighting Their Involvement In Practically Every Sphere Of Life. Along With The Cultivation/Isolation/Purification Of Microbes, This Edition Also Contains Exercises Concerning Air, Soil, Water, Food, Dairy And Agricultural Microbiology, Bacterial Genetics, Plant Pathology, Plant Tissue Culture And Mushroom Production Technology. This Manual Contains 163 Experiments Spread Over 22 Different Sections. The Exercises Are Presented In A Simple Language With Explanatory Diagrams And A Brief Recapitulation Of Their Theory And Principle. The Exercises Are Selected By Keeping In Mind The Easy Availability Of Cultures, Culture Media And Equipment. Appendices At The End Of The Manual Provide A Reference To The Source For Obtaining Cultures Of Microbes, Culture Media And Preparation Of

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Various Stains, Reagents And Media In The Laboratory And Classification Of Prokaryotes According To The First And Second Editions Of Bergey's Manual Of Systematic Bacteriology. This book would be useful for the undergraduate and postgraduate students, teachers and scientists in diverse areas including the biological sciences, the allied health services, environmental science, biotechnology, agriculture, nutrition, pharmacy and various other professional programmes like milk processing units, diagnostic (clinical) microbiological laboratories and mushroom cultivation at small or large scales.

The Handbook of Media for Environmental Microbiology is a compilation of the formulations, methods of preparation, and applications for media used for the isolation and cultivation of microorganisms from environmental sources. This comprehensive sourcebook includes descriptions of 1,675 media organized alphabetically. The format allows easy reference to the information needed to prepare media for the cultivation of microorganisms relevant to environmental analyses. Each listing includes medium composition, instruction for preparation, commercial sources, and uses. The Handbook is an essential volume for environmental microbiologists and all those involved in cultivating microorganisms.

Population growth with increasing consumption levels leads to abundant waste in Kuantan. Jabor landfill, commonly known as Kuantan landfill, receives more than 500 tons of waste per day with a composition of 60% of domestic waste and 40% of commercial waste. The composition of domestic waste were organic waste, green waste, mixed paper, plastic, textile, ferrous, glass, rubber and leather, and others. Meanwhile, the compositions of commercial waste are food, plastic, yard waste, paper, cardboard, textile, glass, non-ferrous, rubber, wood, ferrous metals. Landfill system always produces leachate. This waste contains many types of bacteria with the potential to degrade the waste compound. Screening tests with selective media demonstrated the ability of bacteria to produce amylase, lipase, protease and cellulase enzymes. These enzymes are needed to accelerate the molecules breakdown of municipal solid waste in the biodegradation process. Samples for isolation of bacteria were taken from different places, namely landfill soil and leachate. Identification of bacteria was conducted using Gen III microplate BIOLOG microbial identification system. They were *Bacillus amyloliquefaciens*, *Bacillus raris*, *Bacillus licheniformis*, *Bacillus subtilis* and *Kocuria varians*. There were 4 different treatments: composting pile without bacteria (T0), composting pile with inoculation of amylase and protease producing bacteria (T1), composting with inoculation of lipase and cellulase producing bacteria (T2), and composting with inoculation all enzyme-producing bacteria (T3). The result of biodegradation process of T3 treatment reached the highest temperature (53° C) with the longest thermophilic phase compared to other treatments. The lower value of C/N ratio, the more stable the level of maturity of compost. The lowest of C/N ratio value was T3 (10%). T3 treatment compared with other treatments can increase as much as 27% content of nitrogen, 67% of phosphorus and 33% of potassium. All the treatments with bacterial inoculation (T1, T2, and T3) are able to reduce the content of heavy metals (Fe, Zn, Cu) on municipal solid waste biodegradation. It can be concluded that the inoculation of potential enzyme-producing of bacteria on municipal solid waste biodegradation is effective to increase the nutrient content and decrease the heavy metals.

Enzymatic processing of lipids and oils is becoming an important area of research. Hydrolytic enzymes, such as lipases and proteases are being sought after as the biocatalysts. This book focuses on the search and acquisition, isolation and purification and the characterisation of these enzymes.

Enzymes are biological catalysts that lower the activation energy of biological reactions. Bacteria can be used in the industrial production of several enzymes. Through my work, I would like to give a short description of Isolation of Lipase enzyme producing bacteria from soil, Production of enzyme, Characterization of enzyme and its Industrial Application. Substrate used in enzyme production must be economical. I have also made an attempt to try various substrates which is cheaper than the one used in the actual production.

The use of biocatalysts, including enzymes and metabolically engineered cells, has attracted a great deal of attention in the chemical and bio-industry, because biocatalytic reactions can be conducted under environmentally-benign conditions and in more sustainable ways. The catalytic efficiency and chemo-, regio-, and stereo-selectivity of enzymes can be enhanced and modulated using protein engineering. Metabolic engineering seeks to enhance cellular biosynthetic productivity of target metabolites via controlling and redesigning metabolic pathways using multi-omics analysis, genome-scale modeling, metabolic flux control, and reconstruction of novel pathways. The aim of this book is to cover the recent advances in biocatalysis and metabolic engineering for biomanufacturing of biofuels, chemicals, biomaterials, and pharmaceuticals. Reviews and original research articles on the development of new strategies to improve the catalytic efficiency of enzymes, biosynthetic capability of cell factories, and their applications in production of various bioproducts and chemicals are included.

Overview of Bioprocessing
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Structure and Anatomy of Fermenter
Types of Fermenter
Isolation and Screening of Industrially Important Microbes
Media for Industrial Fermentation
Process Control in Fermentation
Downstream Processing
Microbial Contamination and Spoilage of Food
General Methods of Preserving Food
Production of Milk Products
Production of Bakery Products
Production of Fermented Beverages
Single Cell Proteins
Mushroom
Vaccines
Antibiotic Production
Industrial Enzymes
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Recent trends in life sciences research is more inclined towards interdisciplinary studies. Recent developments in the technologies have led to a better understanding of living systems and this has removed the demarcations between various disciplines of life sciences. A new trend in life science incorporates biological research involving a merger of diverse disciplines such as ecology, microbiology, toxicology

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and meteorology etc. The book encompasses topics on habitat ecology, biology of apis and apiculture, Cyanobacterial diversity, adaptation of microorganisms, Antibacterial activity, fungal glucose, prawn culture, concept of ecosystem, ozone depletion and global warming, halophilic archaea flourish in hypersaline environment and lycopene: preventive effects against cadmium injury in different tissues, Microbial enzymes and their applications, Phytochemical and antibacterial activity distributed throughout fifteen chapters for the benefits of graduate and postgraduate students as well as young researchers and scientists. In addition, this book provide newer techniques and the use of modern tools in achieving the potential of ecology, microbiology, toxicology, apiculture, aquaculture, meteorology, extremophiles, Immunotherapy of Cancer and Marine bacterial enzymes this is all used to understand the challenges found in life sciences.

Microbial lipases are industrially important and have gained their attention due to their stability, selectivity, and broad substrate specificity. Lipases are used as a medicine and also aid in indigestion, heartburn, allergy to gluten in wheat products (celiac disease), Crohn's disease, and cystic fibrosis. This new volume, *Lipase: An Industrial Enzyme Through Metagenomics*, considers the industrial demand for new sources of lipases with different catalytic characteristics that stimulate the growth and development isolation of new strains. The volume narrates the challenging metagenomic approach with the isolation of the lipase gene, its cloning into *Escherichia coli*, culture of the recombinant bacteria, and extraction and assessment of the lipase enzyme. Lipase-producing bacteria have been found in different habitats, such as industrial wastes, vegetable oil processing factories, dairy plants, and soils contaminated with oil and oil seeds among others. This volume is the effort of the authors to document the scientific findings carried out over the last eight years in the area of un-culturable soil microorganisms. The book presents the physicochemical features of lipases and their specific applications in different commercial industries. The in-depth study looks at metagenomics for lipases from all angles and provides a truly informative resource. It describes the biochemical characterization of lipase enzymes with the high activity in the presence of 1% tributyrin. The book also highlights the maximum activity of the enzyme at temperature 37C and pH 7.5 in the presence of the divalent cations Ca²⁺, Mn²⁺, Zn²⁺ and Fe²⁺. CTAB, gum arabic, NaCl and organic solvents like ethanol, 1-propanol, acetone, acetonitrile, glycerol and DMSO. A wide review has been presented in the book on lipase enzymes purified from a large collection of microbes present in soil, seawater, waste-dumping sites, animal systems (including human beings), and the atmosphere. Stability of enzymes over changing environments of the industry is indeed a big issue, and the book deals at length with the changing temperatures and pH and metal ion concentrations. The book also highlights the antifungal and antibacterial activity of the lipase enzyme. This book offers the latest scientific research on applied microbiology presented at the IV International Conference on Environmental, Industrial and Applied Microbiology (BioMicroWorld2011) held in Spain in 2011. A wide-ranging set of topics including agriculture, environmental, food, industrial and medical microbiology makes this book interesting not only for microbiologists, but also for anyone who likes to keep up with cutting-edge research in microbiology and microbial biotechnology. Readers will find a major collection of knowledge, approaches, methods and discussions on the latest advances and challenges in applied microbiology in a compilation of 136 chapters written by active researchers in the field from around the world. The topics covered in this single volume include biodegradation of pollutants, water, soil and plant microorganisms, biosurfactants, antimicrobial natural products, antimicrobial susceptibility, antimicrobial resistance, human pathogens, food microorganisms, fermentation, biotechnologically relevant enzymes and proteins, microbial physiology, metabolism and gene expression mainly, although many other subjects are also discussed.

The Handbook of Microbiological Media for the Examination of Food describes more than 1,000 media used to cultivate microorganisms from foods. It also includes all the media recommended by the Food and Drug Administration for the detection of microorganisms in foods.

The demand for industrial enzymes of microbial origin is ever increasing due to their applications in a wide variety of industrial processes. Enzyme mediated reactions are attractive alternatives of existing tedious and expensive chemical methods. Enzymes such as Lipase find their great use in a large number of industries such as food, dairy, detergent, textile, and cosmetic. However, with the realization of the biocatalytic potential of microbial lipases in both aqueous and nonaqueous media in the last one and a half decades, industrial fronts have shifted towards utilizing this enzyme for a variety of reactions of immense importance. This work describe about the isolation and optimization of Lipase producing bacteria.

This book focuses on the utilization of bio-resources and their conversion pathways for a sustainable future. Tapping into bio-resources by means of thermochemical and biochemical processes has attracted researchers from all over the world; it is a broad area that has given birth to concepts like the biorefinery, as well as a new stream known as biotechnology. Its scope includes biochemical and microbiological engineering, biocatalysis and biotransformation, biosynthesis and metabolic engineering, bioprocess and biosystem engineering, bioenergy and biorefineries, cell culture and biomedical engineering, food, agricultural and marine biotechnology, bioseparation and biopurification engineering, bioremediation and environmental biotechnology, etc. The book discusses a host of new technologies now being used to tap these resources with innovative bioprocesses. All chapters are based on outstanding research papers selected for and presented at the IconSWM 2018 conference.

This book explores various aspects of thermophilic and halophilic microbes from Eurasian ecosystems, which have proved to offer a unique reservoir of genetic diversity and biological source of extremophiles. It also covers the biotechnological uses of extremophiles, and their potential use in agricultural and industrial applications. The topics addressed include but are not limited to: diversity and microbial ecology, microbe-environment interactions, adaptation and evolution, element cycling and biotechnological applications of thermophiles and halophiles in Eurasian ecosystems. In order to review the progress made in biology and biotechnological applications of thermophiles and halophiles, the book combines review papers and results of original research from various specialists and authorities in the field. It includes several chapters describing the microbial diversity and ecology of geothermal springs distributed among the territory of various Eurasian countries, such as Armenia, Bulgaria, China, Georgia, India, Italy, Pakistan and Turkey. A dedicated chapter discusses selected aspects of thermophilic chemolithotrophic bacteria isolated from mining sites (sulfide ores); detailed descriptions of various thermophile microbes isolated from high-temperature environments and their biotechnological potential are also provided. Subsequent chapters describe the diversity and ecology of halophilic microbes harbored in saline and hypersaline lakes in Iran, Turkey and China; soil and plant microbiomes in saline arid lands of Uzbekistan; microbial

diversity in Asian deserts; and the potential applications of thermophilic and halophilic microbes as exopolysaccharide (EPS) producers, focusing on the chemistry and applications of the EPS they produce. We hope that this book will prove valuable as an up-to-date overview of the current state of research on Eurasian extremophiles in general and thermophiles and halophiles in particular. Many questions remain unanswered, and we hope that it will stimulate further studies in this intriguing and promising field. Carboxylic Ester Hydrolases—Advances in Research and Application: 2013 Edition is a ScholarlyEditions™ book that delivers timely, authoritative, and comprehensive information about Cholinesterases. The editors have built Carboxylic Ester Hydrolases—Advances in Research and Application: 2013 Edition on the vast information databases of ScholarlyNews.™ You can expect the information about Cholinesterases in this book to be deeper than what you can access anywhere else, as well as consistently reliable, authoritative, informed, and relevant. The content of Carboxylic Ester Hydrolases—Advances in Research and Application: 2013 Edition has been produced by the world's leading scientists, engineers, analysts, research institutions, and companies. All of the content is from peer-reviewed sources, and all of it is written, assembled, and edited by the editors at ScholarlyEditions™ and available exclusively from us. You now have a source you can cite with authority, confidence, and credibility. More information is available at <http://www.ScholarlyEditions.com/>.

The International Science Congress Association organized the 2nd International Science Congress (ISC-2012) with 'Science and Technology - Challenges of 21st Century' as its focal theme. ISC-2012 was divided in 20 sections. A total number of 800 Research Papers and 1200 registrations from 23 countries all over the world have been received. They was mainly from Bangladesh, Bulgariya, Cameroun, France, Greece, Iran, Iraq, Kazakhstan, Korea, Lithuania, Malaysia, Nigeria, Nepal, Phillipines, Pakistan, Poland, Romania, Slovakiya, USA, Ukraine, Venezuela, Turkey and India.

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Linoleic acid isomerase (LAI) is the enzyme that converts linoleic acid to conjugated linoleic acids (CLAs) which appear to be capable of lowering cancer risk and enhancing immunity. There is an interest in developing commercial processes for the production of single isomers of CLA by biotransformation of LA using microbial cells and enzymes. However, the evaluation of these strains suggest that growth and LA isomerase production levels by these anaerobes are insufficient to support economic commercial production of single CLA isomers. A better alternative is to clone the isomerase gene and to generate new production strains using recombinant technology. Bifidobacterium LAI genes were cloned into pET24a(+) as an expression vector and transferred into E. coli BL21 (DE3) as the expression host while Propionibacterium acnes LAI were cloned into Bacillus species as the expression hosts. Unfortunately, the expressed Bifidobacterium LAI formed inclusion bodies and did not exhibit detectable enzymatic activities. Propeptide Staphylococcus hyicus lipase fused with P. acnes LAI expressed in B. megaterium YYBm1 was secreted into the surrounding medium. Based on MALDI-TOF MS results showed that this propeptide S. hyicus lipase still attached with the secreted LAI and might inhibit activity. However, other propeptides (B. subtilis nprE, B. subtilis amyE, B. megaterium nprM) did not protect LAI from proteolytic degradation. Methionine is the first limiting amino acid in poultry feed and must be supplemented to the poultry feed mixture. Many studies attempted to isolate methionine producing microorganisms from environments and genetically modified by using chemical mutagens. However, genetically-modified organisms are considered unacceptable for use in organic food production. Therefore, wild type strains with methionine-producing ability are necessary for the organic poultry industry. In this study, numerous bacteria were isolated from natural environments that appeared to produce high methionine; however, all of them were identified as pathogens. In addition, bacteria excreted methionine into the surrounding medium and it was concluded that this could be impractical for large scale recovery of methionine. Conversely, isolated yeast strain K1 yielded high methionine content, compared to other yeasts. Based on large subunit rRNA sequences, these isolated strains were identified as Pichia kudriavzevii/Issatchenkia orientalis. P. kudriavzevii/I. orientalis is recognized as a "generally recognized as safe" (GRAS) organism. Yeast strain K1 may be suitable as a source of methionine for dietary supplements in organic poultry feed.

Thermophiles and hyperthermophiles exhibit great biotechnological potential, as they can be utilized in processes which require higher temperatures. This book comprehensively deals with all the aspects of thermophiles, starting from the source of these organisms to their latest applications. In addition it presents a compilation of all compounds produced by various thermophilic microorganisms. Due to their application in everyday life, the demands of enzymes that can work at higher temperature have been increasing. In order to keep pace with the increasing demand the industries have to search novel thermophiles producing their product of interest. Hence, this book will be of value for industries working on various biochemical products produced by these thermophiles as well as for scientists and research scholars working on microbiology and products derived from microorganisms.

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The book contains high-quality research papers presented at Sixth International Conference on Solid Waste Management held at Jadavpur University, Kolkata India during November 23-26, 2016. The Conference, IconSWM 2016, is organized by Centre for Quality Management System, Jadavpur University in association with premier institutes and societies of India. The researchers from more than 30 countries presented their work in Solid Waste Management. The book is divided into two volumes and deliberates on various issues related to innovation and implementation in sustainable waste management, segregation, collection, transportation of waste, treatment technology, policy and strategies, energy recovery, life cycle analysis, climate change, research and business opportunities.

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