Alpha Linolenic Acid Vs Conjugated Linoleic Acid Weight

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Enzymes—Advances in Research and Application: 2012 Edition
Epidemiology, Pathophysiology, and Prevention
Food Science and Technology Bulletin
Food Bioconversion
The Encyclopedia of Seeds
Production, nutrition and medical sciences
Advances in Fermented Foods and Beverages
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Diet, Immunity and Inflammation

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Bioactive Food Components Activity in Mechanistic Approach CRC Press
The promotion of proper nutrition can assist in disease prevention and help to ensure an overall healthy lifestyle. Certain natural or processed foods are particularly useful in achieving and maintaining these goals. Examining the Development, Regulation, and Consumption of Functional Foods is an authoritative reference source for the latest scholarly material on the

consumption and use of specific foods to prevent, manage, and treat diseases. Highlighting critical issues relating to the development, preparation, regulation, and overall benefits of functional foods, this book is ideally designed for medical practitioners, nutritionists, upper-level students, researchers, and academicians.

Functional Foods Wageningen Academic Publishers

Lipid Modification by Enzymes and Engineered Microbes covers the state-of-the art use of enzymes as natural biocatalysts to modify oils, also presenting how microorganisms, such as yeast, can be designed. In the past ten years, the field has made enormous progress, not only with respect to the tools developed for the development of designer enzymes, but also in the metabolic engineering of microbes, the discovery of novel enzyme activities, and in reaction engineering/process development. For the first time, these advances are covered in a single-volume that is edited by leading enzymatic scientist Uwe Borchscheuer and authored by an international team of experts. Identifies how, and when, to use enzymes and microbes for lipid modification Provides enzymatic, microbial and metabolic techniques for lipid modification Covers lipases, acyltransferases, phospholipases, lipoxygenases, monooxygenases, isomerases and sophorolipids Includes lipid modification for use in food, biofuels, oleochemicals and polymer precursors

Role of Materials Science in Food Bioengineering Elsevier
Edited by renowned protein scientist and bestselling author Roger L. Lundblad, with the assistance of Fiona M. Macdonald of CRC Press, this fifth edition of the Handbook of Biochemistry and Molecular Biology gathers a wealth of information not easily obtained, including information not found on the web. Presented in an organized, concise, and simple-to-use format, this popular reference allows quick access to the most frequently used data. Covering a wide range of topics, from classical biochemistry to proteomics and genomics, it also details the properties of commonly used biochemicals, laboratory solvents, and reagents. An entirely new section on Chemical Biology and Drug Design gathers data on amino acid antagonists, click chemistry, plus glossaries for computational drug design and medicinal chemistry. Each table is exhaustively referenced, giving the user a quick entry point into the primary literature. New tables for this edition: Chromatographic methods and solvents Protein spectroscopy Partial volumes of amino acids Matrix Metalloproteinases Gene Editing Click Chemistry
Dietary Conjugated Linoleic Acid (CLA) Reduces Protein Level of Cytosolic Phopholipase A2 and Peroxisome Proliferator-activated Receptor Alpha and Ameliorates Early Renal Disease Progression in Obese Fa/fa Zucker Rats BoD – Books on Demand
ABSTRACT: Background: Osteoporosis and obesity are global health problems.

Milk is high in n-3 alpha-linolenic acid (ALA), conjugated linoleic acid (CLA), and calcium, all of which are regarded as health beneficial by promoting bone formation and decreasing adiposity. This study examined the interaction among these milk components and the mechanisms underlying this regulation. Methods: Mouse ST2 stromal, MC3T3-L1 adipocyte-like, and MC3T3-E1 osteoblast-like cells were treated with: 1) ALA with LA:ALA=1:5:1; 2) individual/combinations of 20 [mu]M cis-9,trans-11 (9,11) and trans-10,cis-12 (10,12) CLA isomers (80:10, 90:10, or 90:5%); 3) calcium phosphate (0.5-3.0 mM); or 4) combinations of ALA, CLAs, and calcium, with a slight modification, accordingly, during proliferation (8 days) and adipogenic and/or osteoblastic differentiation (6 days). Following the oil red O and alizarin red S staining, quantification of triglyceride accumulation and calcium deposition was performed. Secretion of eicosanoids and growth factors was determined from differentiation media. Results: ALA with LA:ALA=1:5:1 constantly inhibited proliferation/differentiation of MC3T3-L1 but facilitated MC3T3-E1 cell differentiation, showing maximal osteoblastogenesis and minimal adipogenesis at LA:ALA=4:1. At this level, insulin-like growth factor-1 (IGF-1) and IGF binding protein-3 (IGFBP-3) production was lowest in MC3T3-L1 cells, implying that ALA may regulate adipocyte differentiation via IGF-1/IGFBP-3 signaling pathway. Various combinations of 9,11/10,12-CLA

mixtures had a tendency to inhibit MC3T3-L1 and MC3T3-E1 cell proliferation. During differentiation, combined 9,11-/10,12-CLAs, unlike individual isomers having a negligible effect on both cell growth, exerted a promising outcome by further decreasing adipocytic and increasing osteoblastic differentiation. In both cells, most of CLA isomer mixtures resulted in increased (but not significant) production of prostaglandin E2 (PGE2). The 1.5-2.5 mM calcium level was the best by promoting ST2 and MC3T3-E1and inhibiting MC3T3-L1 cell proliferation. Incorporation of ALA, CLA isomers, and calcium generally decreased ST2 and MC3T3-E1 but not MC3T3-L1 cell proliferation. During differentiation, however, ALA (4:1)+CLA (90:10%)+calcium (2.0 mM) significantly attenuated lipid accumulation in MC3T3-L1 and increased calcium deposition in MC3T3-E1 cells, in which PGE2 and leukotriene B4 (LTB4) production was increased in MC3T3-L1, whereas IGF-1 secretion was decreased in MC3T3-E1 cells, implying the possible benefit of this dietary regimen in promoting bone health by facilitating bone formation and reducing adiposity. Conclusions: These findings suggest that a diet with LA:ALA=4:1 is optimal to improve bone health, which can be further enhanced when incorporated with CLA (9,11:10,12=90:10%) and high calcium (2.0 mM).

Science, Technology and Uses CRC Press

Since the beginning of civilization,

humans and animals have developed very strong associations to their mutual benefits. Livestock, particularly bovines, are important contributors to total food production in the world. The social expectations in Science and Technology are increasing because of rapid advances. Prevention and control of infectious diseases in bovines have been among the top-most public health objective in the last decade. In the present book, experts from different continents present important aspects of bovine science such as louse infestations of ruminants, cytogenetics of bovines, factors of competitiveness for bovines, feed manipulation, enhancement of conjugated linoleic acid and its bioavailability, emergence of antimicrobial resistance, and also meat quality. The aim of this book to provide an understanding of the present scenario, advances and challenges in bovine science.

An Introduction Springer Nature

Although inflammation is one of the body's first responses to infection, overactive immune responses can cause chronic inflammatory diseases. Long-term low-grade inflammation has also been identified as a risk factor for other diseases. Diet, immunity and inflammation provides a comprehensive introduction to immunity and inflammation and the role that diet and nutrition play with regard to this key bodily response. Part one, an introductory section, discusses innate and adaptive immunity, mucosal immunity in a healthy gut and chronic

inflammatory diseases and low grade inflammation. Chapters in part two highlight the role of micronutrients, including zinc, selenium, iron, vitamin A and vitamin D, in inflammation and immunity. Part three explores other dietary constituents and includes chapters on intestinal bacteria and probiotics, the impacts of prebiotics on the immune system and inflammation, and antimicrobial, immunomodulatory and anti-inflammatory effects of food bioactive proteins and peptides. Further chapters explore the role of olive oil, short and long chain fatty acids and arginine and glutamine in immune functions. Nutrition, immunity and inflammation are discussed from an integrative and life course perspective in part four. Chapters focus on adverse immune reactions to foods, early nutritional programming, the impact of nutrition on the immune system during ageing, the impact of exercise on immunity and the interaction with nutrition, and the effect that malnutrition has on immunity and susceptibility to infection. With its distinguished editors and international team of expert contributors, Diet, immunity and inflammation is a comprehensive resource for those researching immunology or inflammation, nutrition scientists, and professionals in the food and nutrition industries who require an understanding of the effect that diet can have on the immune system and inflammation. Provides an overview of key research in the important and connected areas of inflammation,

infection, overactive immune responses, diseases and diet Outlines the fundamentals of immunity and inflammation and reviews the effects of different food constituents Discusses important related issues, such as ageing and exercise

Bovine Science Springer Science & Business Media

Fermentation is used in a wide range of food and beverage applications, and the technology for enhancing this process is continually evolving. This book reviews the use of fermentation in foods and beverages and key aspects of fermented food production. Part one covers the health benefits of fermented foods. Part two includes chapters on fermentation microbiology, while part three looks at ways of controlling and monitoring the quality and safety of fermented foods. Part four covers advances in fermentation technology. Finally, part five covers particular fermented food products.

A Key to Sustainable Development CRC Press

Conjugated linoleic acids (CLA) isomers of linoleic acid - a compound derived from meat and dairy products. Attention was first drawn to their potential anti-carcinogen properties in the 1980's; since then further health benefits have been reported, and applications in the glue and paint industries as a renewable resource have been explored. This comprehensive book presents an overview of the background and research into CLA and examines each of their applications in the context of the

chemistry surrounding them and CLA-enriched oils. The biosynthesis of CLA is presented, with a discussion on how animal husbandry could promote CLA production. Other chapters examine the current strategies for their synthesis using bespoke catalysts and enzymes. Readers from academia and industry will find the layout of the book highly accessible, with sections for each application. The editors are both active researchers in the field, and have brought together a wealth of expertise from across the globe, presenting a comprehensive guide to this valuable group of compounds and their potential applications.

Conjugated Linoleic Acids and Conjugated Vegetable Oils John Wiley & Sons

Cheeses are one of the most diverse food commodities known. They have a wide range of regional and geographical differences in manufacture, taste, texture, colour and contribution to the diet. Because cheese is an important source of macro- and micro-nutrients it can be seen as a valuable product in human nutrition. However, some consider that traditionally manufactured cheeses may not contribute to optimal health. For this reason, there is a drive to produce types with reduced or modified fat or salt contents. Another aspect that affects human health is that cheese may also harbour harmful pathogens in some circumstances. To gain a holistic understanding of cheese in health, nutritionists and dieticians have a fundamental need to grasp the

process of cheese manufacture, while cheese manufacturers benefit by understanding the health related aspects of cheese. This handbook bridges the intellectual and trans-disciplinary divide and provides a balanced overview of cheese in relation to health. Experts provide a comprehensive coverage of subjects in relation to cheese production, nutrition and medical sciences, such as composition and health benefits, toxicology, metabolic and nutritional effects and microbiology.

Bioengineering and Industrial Applications Elsevier

Considered high-priced delicacies or waste material to be tossed away, the use and value of offal-edible and inedible animal by-products-depend entirely on the culture and country in question. The skin, blood, bones, meat trimmings, fatty tissues, horns, hoofs, feet, skull, and entrails of butchered animals comprise a wide variety of products inclu

Soybean and Health Academic Press

We have come to realize that optimal nutrient intake is determined by very specific genetic messages. This realization has led to an entirely new approach to understanding nutrition - the exploration of nutrient effects on gene expression. Edited by leading experts in the field, Nutrient-Gene Interactions in Health and Disease provides an

Examining the Development, Regulation, and Consumption of Functional Foods Elsevier

Conjugated linoleic acid (CLA) refers to all the positional and geometric isomers

of linoleic acid. The two most studied isomers are cis9, trans11-CLA and trans10, cis12-CLA. CLA supplements, often a mixture of the two isomers, have been popularly used for weight loss and other claimed health benefits. However supplementing CLA isomers, especially trans10, cis12-CLA has been shown to cause non alcoholic fatty liver disease (NAFLD) and insulin resistance (IR) in several animal models. Here we have confirmed that supplementing 0.5% trans10, cis12-CLA to C57BL/6 mice for 8 weeks causes NAFLD and IR. When CLA diets were concomitantly supplemented with omega-3 fatty acids docosahexaenoic acid (DHA) or eicosapentaenoic acid (EPA) at 1.5% (w/w) for 8 weeks, DHA prevented CLA induced IR, while EPA was ineffective. Both EPA and DHA prevented CLA induced fatty liver. CLA also reduced the plasma leptin and adiponectin concentrations, and both EPA and DHA partially restored plasma leptin, but only DHA partially restored the plasma adiponectin. In another experiment, concomitant supplementation of CLA diets with 0.5% of flaxseed oil (rich in alpha linolenic acid) also prevented IR and decreased liver weights and lipids compared with those in CLA group. CLA supplementation also altered lipid profile in liver, decreasing n-6 and n-3 wt% and increasing n-6:n-3 ratio. Concomitant supplementation with flaxseed oil increased n-6 and n-3 polyunsaturated (PUFA) in liver lipids and decreased the n-6:n-3 ratio compared to that in CLA group. Supplementing 0.5% (w/w) of

purified c9, t11- or trans10, cis12-CLA to mice for 8 weeks altered fatty acid profile of tissues differently. c9, t11-CLA diet reduced MUFA wt% in liver, adipose tissue, and spleen, and reduced the spleen n-3 PUFAs significantly while increasing the n-6 PUFA wt% in all tissues except heart. In contrast, trans10, cis12-CLA reduced both the n-6 and n-3 PUFA wt% in liver and heart however increased the wt% of n-3 PUFAs in spleen. Considering the adverse health effects of trans10, cis12-CLA and of mixtures of CLA isomers on NAFLD, IR and tissue fatty acids, human use of CLA supplements should not be recommended.

Effect of Omega-3 Fatty Acids on T10, C12-conjugated Linoleic Acid Induced Insulin Resistance, Non Alcoholic Fatty Liver Disease and Tissue Fatty Acid Composition Oxford University Press

"Biorganic Synthesis: An Introduction" provides an introductory explanation of the biosynthesis of organic compounds, organic reactions, and cellular bioorganic processes.

Obesity, Inflammation and Cancer ScholarlyEditions

In addition to its metabolic and endocrinologic effects, obesity and adipose tissue have now been shown to be associated with low grade inflammation resulting in cellular and humoral inflammatory factors of which the latter may act by endocrine, paracrine and autocrine mechanisms. These inflammatory mediators have increasingly been suggested as contributing to the obesity link to

carcinogenesis and cancer promotion. This volume of Energy Balance and Cancer will focus on recent developments and cutting edge research pointing to inflammation and inflammatory factors as key mediators of this linkage. The volume first provides information on inflammation as an important link between obesity and insulin resistance, which is in itself linked to promotion of cancer through hyperinsulinemia. The volume then covers some of the most important mechanisms by which obesity leads to inflammation, including the novel inflammasome concept, alterations in chromatin structure, circulating inflammatory factors, unique cellular interactions between adipocytes and macrophages and the direct link of dietary fat to inflammation and cancer. Overall, this volume will provide important insight to help understand how inflammation may help modulate the linkage between obesity and cancer and serve as a platform for developing future research in this area.

Probiotics Simon and Schuster

Dairy foods account for a large portion of the Western diet, but due to the potential diversity of their sources, this food group often poses a challenge for food scientists and their research efforts. Bringing together the foremost minds in dairy research, Handbook of Dairy Foods Analysis, Second Edition, compiles the top dairy analysis techniques and methodologies from around the world into one well-organized volume. Exceptionally comprehensive in both its

detailing of methods and the range of dairy products covered, this handbook includes tools for analyzing chemical and biochemical compounds and also bioactive peptides, prebiotics, and probiotics. It describes noninvasive chemical and physical sensors and starter cultures used in quality control. This second edition includes four brand-new chapters covering the analytical techniques and methodologies for determining bioactive peptides, preservatives, activity of endogenous enzymes, and sensory perception of dairy foods, and all other chapters have been adapted to recent research. All other chapters have been thoroughly updated. Key Features: Explains analytical tools available for the analysis of the chemistry and biochemistry of dairy foods Covers a variety of dairy foods including milk, cheese, butter, yogurt, and ice cream Analysis of nutritional quality includes prebiotics, probiotics, essential amino acids, bioactive peptides, and healthy vegetable-origin compounds Includes a series of chapters on analyzing sensory qualities, including color, texture, and flavor. Covering the gamut of dairy analysis techniques, the book discusses current methods for the analysis of chemical and nutritional compounds, and the detection of microorganisms, allergens, contaminants, and/or other adulterations, including those of environmental origin or introduced during processing. Other methodologies used to evaluate color, texture, and flavor are also discussed. Written by an

international panel of distinguished contributors under the editorial guidance of renowned authorities, Fidel Toldrá and Leo M.L. Nollet, this handbook is one of the few references that is completely devoted to dairy food analysis – an extremely valuable reference for those in the dairy research, processing, and manufacturing industries.

Dairy-Derived Bioactive Alpha-Linolenic Acid, Conjugated Linoleic Acid, and Calcium as Modulators of ST2 Stromal, MC3T3-L1 Adipocyte-like, and MC3T3-E1 Osteoblast-like Cell Metabolism

Academic Press

Bioactive Food Components Activity in Mechanistic Approach presents the role of functional foods and bioactive compounds in inflammation. This book focuses on bioactive compounds, including phenolics, prebiotics, carotenoids, tocopherols, bioactive peptides, probiotics, polyunsaturated and monounsaturated fatty acids, and describes their actions in several diseases, mainly obesity and co-morbidities, inflammatory bowel disease, cognitive decline and cancer, and aging. Intended for food, nutrition, and nutraceutical researchers, as well as those studying related fields, the book offers a mechanistic approach that is currently lacking in the market. Explores the mechanistic approach of functional foods in health and disease Contains definitions, case studies, applications, literature reviews, recent developments and text boxes Provides coverage of phenolic compounds, prebiotics and probiotics, carotenoids, tocopherols,

bioactive peptides, polyunsaturated and monounsaturated fatty acids, and sulfur compounds

Digestion, metabolism and impact of nutrition on gene expression, immunology and stress Academic Press

Until now, no comprehensive handbook on industrial biocatalysis has been available. Soliciting chapters on virtually every aspect of biocatalysis from international experts most actively researching the field, the Handbook of Industrial Biocatalysis fills this need. The handbook is divided into three sections based on types of substrates. T

CRC Press

This book contains key contributions to the Xth International Symposium on Ruminant Physiology. Proceedings from past ISRP symposia have had a major influence on research and teaching in animal science over the years. Without a doubt the peer-reviewed chapters in this book, written by some of the best scientists in the field, will live up to this fine tradition. The chapters cover a wide range of topics spanning from digestion and absorption to metabolism, reproduction and lactation. Advancement of knowledge within important issues related to rumen fermentation, absorption mechanisms and splanchnic metabolism is treated in nine chapters. A number of chapters address the relationship between nutrition and gene expression illustrating important progress in scientific knowledge that can be obtained by applying the molecular biology methods

to the field. Several chapters address the effects of nutrition on immunology and cover topics related to the health and welfare of production animals. In keeping with the increased attention on the relationship between food and human health, the book contains two important chapters on this topic.

Advances in Dairy Products Royal Society of Chemistry

Animals are biological transformers of dietary matter and energy to produce high-quality foods and wools for human consumption and use. Mammals, birds, fish, and shrimp require nutrients to survive, grow, develop, and reproduce. As an interesting, dynamic, and challenging discipline in biological sciences, animal nutrition spans an immense range from chemistry, biochemistry, anatomy and physiology to reproduction, immunology, pathology, and cell biology. Thus, nutrition is a foundational subject in livestock, poultry and fish production, as well as the rearing and health of companion animals. This book entitled Principles of Animal Nutrition consists of 13 chapters. Recent advances in biochemistry, physiology and anatomy provide the foundation to understand how nutrients are utilized by ruminants and non-ruminants. The text begins with an overview of the physiological and biochemical bases of animal nutrition, followed by a detailed description of chemical properties of carbohydrates, lipids, protein, and amino acids. It advances to the coverage of the digestion, absorption, transport, and

metabolism of macronutrients, energy, vitamins, and minerals in animals. To integrate the basic knowledge of nutrition with practical animal feeding, the book continues with discussion on nutritional requirements of animals for maintenance and production, as well as the regulation of food intake by animals. Finally, the book closes with feed additives, including those used to enhance animal growth and survival, improve feed efficiency for protein production, and replace feed antibiotics. While the classical and modern concepts of animal nutrition are emphasized throughout the book, every effort has been made to include the most recent progress in this ever-expanding field, so that readers in various biological disciplines can integrate biochemistry and physiology with nutrition, health, and disease in mammals, birds, and other animal species (e.g., fish and shrimp). All chapters clearly provide the essential literature related to the principles of animal nutrition, which should be useful for academic researchers, practitioners, beginners, and government policy makers. This book is an excellent reference for professionals and a comprehensive textbook for senior undergraduate and graduate students in animal science, biochemistry, biomedicine, biology, food science, nutrition, veterinary medicine, and related fields.

Handbook of cheese in health: production, nutrition and medical sciences CRC Press

The Advanced Dairy Chemistry series

was first published in four volumes in the 1980s (under the title Developments in Dairy Chemistry) and revised in three volumes in the 1990s and 2000s. The series is the leading reference on dairy chemistry, providing in-depth coverage of milk proteins, lipids, lactose, water and minor constituents. Advanced Dairy Chemistry Volume 2: Lipids, Fourth Edition, is unique in the literature on milk lipids, a broad field that encompasses a diverse range of topics, including synthesis of fatty acids and acylglycerols, compounds associated with the milk fat fraction, analytical aspects, behavior of lipids during processing and their effect on product characteristics, product defects arising from lipolysis and oxidation of lipids, as well as nutritional significance of milk lipids. In the years since the publication of the third edition there have been significant developments in milk lipids and these are reflected in changes to this volume. Most topics included in the third edition are retained in the current edition, which has been updated; in some cases, new authors have given their perspective on certain topics. Chapters on nutritional significance of dairy lipids have been considerably revised. This authoritative work summarizes current knowledge on milk lipids and suggests areas for further work. It will be very valuable to dairy scientists, chemists and others working in dairy research or in the dairy industry.