
Food-stability management is the burning challenge for all those involved in the production chain of the food industry. This book uniquely deals with the subject in 10 different chapters dealing with physical, chemical, and biochemical factors that affect shelf-life stability. Various factors such as water, temperature variance, irradiation, packaging, storage, antioxidants, emulsifiers, enzymes, and application of biotechnology to improve shelf life are all dealt with in critical details.

The opening chapter features a thorough discussion of water activity and plasticization in the physicochemical properties of the food materials.

Chapter 2 deals with the impact of mechanical and thermal changes on shelf-life stability of fruits and vegetables. Chapter 3 explains the application of irradiation in extending foods’ shelf life. Chapter 4 covers a thorough discussion on how packaging affects shelf life. Chapter 5 describes the benefits of controlled and modified atmosphere packaging on shelf life of fruits, vegetables, grains, and oilseeds. Chapter 6 is a detailed survey of natural as well as synthetic antioxidants in retarding the rancidity of foods. Chapter 7 extends the role of emulsifiers and stabilizers in food products. Chapter 8 covers the versatility of sulfites as effective antimicrobial agents, including their ability to control enzymic and nonenzymic spoilage. Chapter 9 examines the role of oxidative enzymes in foods.

The final chapter describes the application of biotechnology in providing solutions to extend shelf life of foods. There is an extensive list of selected references and a useful index.

This book is well written and well documented, with useful illustrations and diagrams, and offers a compact review of food-quality management. This will be an excellent reference for scientists and technologists involved with various facets of food technology principles.

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Extracts and distillates


Factors affecting the lack of acceptance of genetically modified (GM) foods, particularly in the United Kingdom and Europe, are examined. The development of niche markets for GM products in these regions may be a slow process and require the introduction of products that have consumer trust and deliver obvious benefits. Traceability systems need to be implemented. The benefits of free trade are seen to be compromised unless there is universal acceptance of these products.


Expression of the calendula seed-specific CoFad2 gene in yeast resulted in enzymatic activity of a fatty acid conjugase capable of converting linoleic acid (18:3; 9Z,12Z) to calenacid (18:3; 8E,10E,12Z) and to a lesser extent palmitoleic acid (16:1; 9Z) and oleic acid (18:1; 9Z) to compounds with properties of 8,10-conjugated dienes. The gene CoFad2 was expressed in all calendula tissues tested and was determined to encode a Δ12-desaturase active in the introduction of a double bond at position 12 of both palmitoleic and oleic acids.


Plasma kallikrein (PKal) enzymatically mediates a plasminogen cascade that causes a breakdown of the environment surrounding immature, or precursor, fat cells that then differentiate into mature fat cells or adipocytes. This transformation into full-blown blobs of fat rather than an increase in the total number of cells is primarily responsible for the development of obesity. PKal is considered to be a potential drug target in the prevention of fat deposition.


Consumption of a 20% high-fat diet produced a widespread cognitive deficit that affected performance on a wide range of learning and memory tasks in...
Tissue, and Serum Lipids Are Valid come those deficits associated with hippocampal function. It was hypothesized that the influence of high-fat diets is mediated, in part, through their effect through the development of insulin resistance and glucose intolerance.


A valid biomarker for dairy intake is available with the measurement of the 15:0 acid or 14:0 content in adipose tissue. The 14:0 content is easier to measure. In the absence of an adipose tissue sample, determination of the 15:0 acid content of serum cholesterol ester or phospholipid can be used.


Consumption of saturated and trans fatty acids should be discouraged. A more favorable serum lipoprotein pattern occurs on a solid-fat diet rich in lauric acid than on a diet containing partially hydrogenated soybean oil rich in trans acids. Solid fats rich in lauric acid, such as tropical fats, are preferred to trans acids in food manufacturing where hard fats are required.

Recent Advances on the Nutritional Effects Associated with the Use of Garlic as a Supplement has been published as a compendium of 37 papers (J. Nutr. 131:950–1123, 2001).


Matsuura, H., Saponins in Garlic as Modifiers of Cardiovascular Disease, Ibid.:1000–1005.


Serum levels of n-3 polyunsaturated fatty acids, especially docosahexaenoic acid (DHA), were significantly higher in subjects suffering from atrophic gastritis (AG) than in non-AG. The levels of n-6 acids as represented by γ-linolenic acid (GLA) levels were significantly lower in AG subjects. GLA may be associated with a reduction in the incidence of AG, whereas DHA may increase the risk of AG.


Reversed-phase high-performance liquid chromatography (HPLC) allowed 98% resolution of brominated model triacylglycerol positional isomer pairs. Subsequent quantitation was made by HPLC–flame-ionization detection. Application of the technique can facilitate the study of food formulation lipids.

New books


Fuel journal announced

Leaf Coppin Publishing Ltd. has begun publication of Fuels International: Advances in Fuels and Automotive Energy, a new journal that will include biodiesel fuels as one of its topics. The first issue was printed in October 2000. Further information is available from Leaf Coppin Publishing Ltd., P.O. Box 111, Deal, Kent CT14 6SX, England. An annual subscription is £275 or $450.

Coming soon ...

In the June inform:

Tallow
by Catherine Watkins, inform editor-writer. In terms of tonnage, tallow ranks as No. 2 in production in the United States (behind soybean oil). As a by-product of the beef industry, tallow has been affected by the European incidences of bovine spongiform encephalopathy (mad cow disease), and, in some markets, it is competing with palm and palm kernel oils. This article will look at the global situation, including current research into potential nonedible uses.

Soybean oil
by Frank Gunstone of the Scottish Crop Research Institute in Dundee, Scotland. A primer on the composition, supply, use, and outlook for the world's most widely consumed vegetable oil.

In Journal of Oleo Science for April 2001

REGULAR PAPERS:
Effect of Depigmentation for 3,4-Di-O-cafeoylquinic Acid Guided by Tyrosinase Inhibitory Activity from Conyza filaginoides (T. Tada, Y. Tezuka, K. Shimomura, S. Ito, H. Hattori, and S. Kadota)

Chemical Composition of Soybean Oil Extracted from Hypocotyl-Enriched Soybean Raw Material and Its Cholesterol-Lowering Effects in Rats (Y. Ozawa, H. Sato, A. Nakatani, O. Mori, Y. Hara, Y. Nakada, Y. Akiyama, and Y. Morinaga)

Inhibition of the Activity of Mouse Macrophage Scavenger Receptors by Antioxidants (M. Beppu, T. Watanabe, M. Kasahara, M. Watanabe, and K. Kikugawa)

Improved Method for Preparation of the Methyl Ester of Conjugated Linoleic Acid (T. Kamegai, M. Kasai, and I. Ikeda)

Effects of Emulsifiers on Fat Bloom Stability of Cocoa Butter (T. Katsuragi and K. Sato)

Determination of Sucrose Fatty Acid Esters by High-Performance Liquid Chromatography (H. Okumura, N. Kitazawa, and S. Wada)

NOTES:
Low Inhibitory Activities of Food Phenolics Against Binding of Estradiol to Human Estrogen Receptor a (H. Mi, K. Hiramoto, and K. Kikugawa)

Features of 4-Desmethylersterols in Tomato Shoots (S. Takatsuto and Y. Narumi)