Biosynthesis of Food Components

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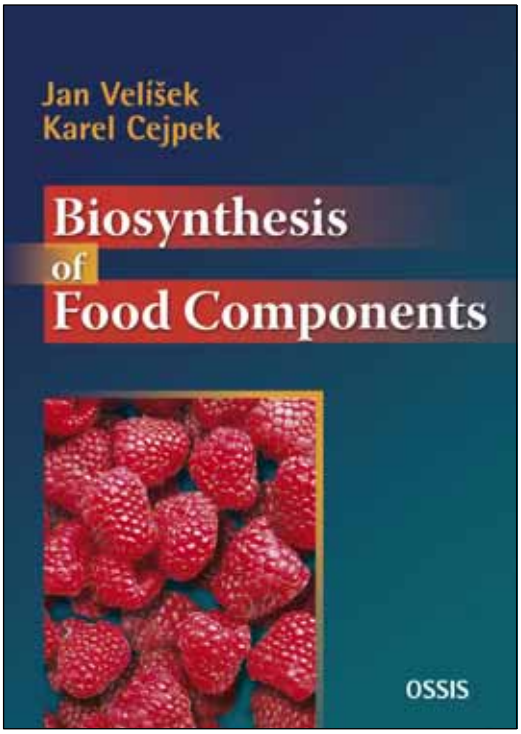
This book presents a survey of the main pathways that lead to the biosynthesis of the principal food components; including amino acids, peptides, lipids, saccharides, vitamins, terpenoids, phenolic compounds, natural pigments, alkaloids, and toxic glycosides. It basically consists of the compilation of findings contained in a selection of articles, i.e. written by this book's author, and published in the Czech Journal of Food Sciences over the last few years. These articles have been completely revised, reformulated, and comprehensively expanded upon. In addition, a number of new topics have also been introduced. This book comprises more than 500 reaction schemes, other figures and 22 tables, with extensive coverage of reaction schemes, sequences, and involved enzymes. Overall, this publication offers detailed explanations using chemical principles and reaction mechanisms, making it valuable for advanced students, biochemists, food chemists, and nutritionists alike.



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1 Biosynthesis and Chemical Properties of Natural Substances in Plants. The number of known so-called â€œsecondary metabolitesâ€ (also referred to as â€œnatu-ral productsâ€) that have been discovered to date is increasing at a constant rate.Â a precursor for the biosynthesis of aromatic secondary metabolites. Similar pre-cursors are used within one class of compounds for the biosynthesis, but the same precursors can be also used for a range of different metabolites. The nal products are derived from three major classes of compounds and marked in the same color in Figure 1.4.Â Among the Brassica species used as food or spices, compartmentation is espe-cially important because it gives rise to the special taste of these crops. Food processing has strong effects on the food microbiota, but may also create new growth opportunities for endospore formers and cross-contaminating bacteria such as L. monocytogenes, which at present are one of the main concerns in the food processing industries. The frequent contamination with bacterial endospores found in vegetable raw materials and the lack of competitive microbiota in the processed food products are also aggravating factors.Â The biosynthesis of bacterial EPSs is complex and unstable, and a large number of genes are involved. Molecular approaches have been used to characterize the genes encoding EPSs. The presence of a glycosyltransferase gene has been reported for Lb. plantarum. Biosynthesis is a multi-step, enzyme-catalyzed process where substrates are converted into more complex products in living organisms. In biosynthesis, simple compounds are modified, converted into other compounds, or joined together to form macromolecules. This process often consists of metabolic pathways. Some of these biosynthetic pathways are located within a single cellular organelle, while others involve enzymes that are located within multiple cellular organelles. Examples of these biosynthetic Trans Fat Replacements in Foods. Trans Fat Replacements in Foods (pg.2). Resource Material. Market Trends. The History of Lipid Science & Technology.Â Biosynthesis of Fatty Acids. The Author: Dr. Peter Reilly, Department of Chemical and Biological Engineering, Iowa State University, Ames, Iowa 50011, U.S.A. Home Chemistry/Physics.Â TE16 members are part of amino acid adenylation proteins, polyketide, fatty acid, and nonribosomal peptide synthases, and enterobactin synthase component F made by bacteria, fungi, and animals. Bacterial polyketide synthases have TE17 domains. TE18 domains are found in bacterial amino acid adenylation proteins and nonribosomal peptide synthases and in animal S-acyl fatty acid synthases. The biosynthesis of starch occurs only in plant cells. Enzymes for starch synthesis are absent in animal cells. This process takes place in the chloroplast of plant cells. The first step in the biosynthesis of starch is the synthesis of ADP-glucose. This ADP-glucose acts as a precursor of all the glucose subunits found in starch. The synthesis of ADP-glucose is linked to the Calvin cycle of photosynthesis.Â Starch found great uses in the food and paper industry. Food Industry. Starch is used as a sweetening agent in beverages. It is used as a bulking agent for fairy products.Â The biosynthesis of starch is coupled with the Krebs cycle and involves the following steps; Synthesis of ADP-glucose. Elongation of chain by starch synthase.