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Czech J. Food Sci.

Velíšek J., Cejpek K.

Biosynthesis of food

constituents: Lipids. 1. Fatty acids and derivated compounds — a review

Czech J. Food Sci., 24 (2006): 193-216

This review article gives a survey of the principal biosynthetic pathways that lead to the most important common fatty acids and their derivatives occurring in foods and feeds. Fatty acids are further subdivided to saturated fatty acids and unsaturated fatty acids. This review is focused on the less common fatty acids including geometrical and positional isomers of unsaturated fatty acids, acetylenic fatty acids, branched-chain fatty acids, alicyclic fatty acids, epoxy fatty acids, hydroxy fatty acids, and oxo fatty acids. A survey is further given on the biosynthesis of the aliphatic very-long-chain components (alkanes, primary and secondary alcohols, aldehydes, ketones, and esters) of plant cuticular wax derived from saturated fatty acids. Subdivision of the topics is predominantly via biosynthesis. There is extensive use of

reaction schemes, sequences, and mechanisms with enzymes involved and detailed explanations using chemical principles and mechanisms.

Keywords:

biosynthesis; fatty acids; Claisen condensation; saturated fatty acids; medium-chain fatty acids; long-chain fatty acids; very-long-chain fatty acids; ultra-long-chain fatty acids; saturated fatty acids; *cis/trans*-fatty acids; acetylenic fatty acids; branched-chain fatty acids; alicyclic fatty acids; epoxy fatty acids; hydroxy fatty acids; oxo fatty acids; plant wax components

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