

Review on fatty acid desaturases and their roles in temperature acclimatisation

ABSTRACT

Carbohydrates and proteins are polymers of polysaccharides and polypeptide residues, respectively. Conversely, lipids are made up of a wide range of compounds with tremendous differences in structures and lack building blocks. Therefore, fatty acids constitute the major components of various lipid classes such as glycerides and sphingolipids. Fatty acids are organic compounds containing a carboxylic acid group mostly at the end of an aliphatic chain and are categorized into saturated and unsaturated. Most fatty acids especially the so-called polyunsaturated fatty acids (PUFAs) and their derivatives play key biological roles in inflammatory response, cell division, control of lipid metabolism, as signaling molecules, supply of energy and protecting the biological membranes structure and function. In this study, a general overview of fatty acids, their biosynthesis mechanisms as well as biological importance have been discussed. Fatty acid desaturase enzymes and their sources have also been reviewed. Recent studies on the functional expression of different types of desaturase enzymes have also been discussed.

Keyword: Fatty acid desaturases; Unsaturated fatty acids; Functional expression; Membrane fluidity; Temperature acclimatisation