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Plasmalogen lipids: functional mechanism and their involvement in gastrointestinal cancer
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The plasmalogens are a class of glycerophospholipids which contain a vinyl-ether and an ester bond at the <i>sn-1</i> and <i>sn-2</i> positions, respectively, in the glycerol backbone. They constitute 10 mol% of the total mass of phospholipids in humans, mainly as membrane structure components. Plasmalogens are important for the organization and stability of lipid raft microdomains and cholesterol-rich membrane regions involved in cellular signaling. In addition to their structural roles, a subset of ether lipids are thought to function as endogenous antioxidants and emerging studies suggest that they are involved in cell differentiation and signaling pathways. Although the clinical significance of plasmalogens is linked to peroxisomal disorders, the pathophysiological roles and their possible metabolic pathways are not fully understood since they present unique structural attributes for the different tissue types. Studies suggest that changes in plasmalogen metabolism may contribute to the development of various types of cancer. Here, we review the molecular characteristics of plasmalogens in order to significantly increase our understanding of the plasmalogen molecule and its involvement in gastrointestinal cancers as well as other types of cancers.