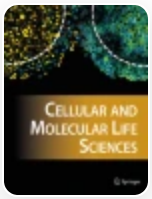
Palmitic acid is an intracellular signaling molecule involved in disease development



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Abstract

Emerging evidence shows that palmitic acid (PA), a common fatty acid in the human diet, serves as a signaling molecule regulating the progression and development of many diseases at the molecular level. In this review, we focus on its regulatory roles in the development of five pathological conditions, namely, metabolic syndrome, cardiovascular diseases, cancer, neurodegenerative diseases, and inflammation. We summarize the clinical and epidemiological studies; and also the mechanistic studies which have identified the molecular targets for PA in these pathological conditions. Activation or inactivation of these molecular targets by PA controls disease development. Therefore, identifying the specific targets and signaling pathways that are regulated by PA can give us a better understanding of how these diseases develop for the design of effective targeted therapeutics.