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Title: Mechanistic Perspectives of Maslinic Acid in Targeting Inflammation

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Abstract: Chronic inflammation drives the development of various pathological diseases such as rheumatoid arthritis, atherosclerosis, multiple sclerosis, and cancer. The arachidonic acid pathway represents one of the major mechanisms for inflammation. Prostaglandins (PGs) are lipid products generated from arachidonic acid by the action of cyclooxygenase (COX) enzymes and their activity is blocked by nonsteroidal anti-inflammatory drugs (NSAIDS). The use of natural compounds in regulation of COX activity/prostaglandins production is receiving increasing attention. In Mediterranean diet, olive oil and table olives contain significant dietary sources of maslinic acid. Maslinic acid is arising as a safe and novel natural pentacyclic triterpene which has protective effects against chronic inflammatory diseases in various in vivo and in vitro experimental models. Understanding the anti-inflammatory mechanism of maslinic acid is crucial for its development as a potential dietary nutraceutical. This review focuses on the mechanistic action of maslinic acid in regulating the inflammation pathways through modulation of the arachidonic acidmetabolism including the nuclear factor-kappa B (NF-kappa B)/COX-2 expression, upstream protein kinase signaling, and phospholipase A(2) enzyme activity. Further investigations may provide insight into the mechanism of maslinic acid in regulating the molecular targets and their associated pathways in response to specific inflammatory stimuli.

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