NLRP3 inflammasome as a treatment target in atherosclerosis: A focus on statin therapy

Parsamanesh N.

Moossavi M.

Bahrami A.

Fereidouni M.

Barreto G.

Sahebkar A.

Activation of NOD-like receptor (NLR)family and pyrin domain containing 3 (NLRP3)inflammasome contributes to inflammation and may lead to atherosclerosis. The NLRP3 inflammasome as a molecular platform regulates the activation of ATP signaling, K+ efflux, cathepsin-B activity, lysosomal function and pro-inflammatory cytokines (i.e. IL-1? and IL-18). Statins has been widely prescribed for the treatment of hyperlipidemia and cardiovascular diseases. In addition to lipid-lowering effect, statins have immunomodulatory, anti-inflammatory, antioxidant and antiapoptotic functions. An increasing number of studies indicated NLRP3 inflammasome and their downstream mediators as important targets for statin drugs in inflammatory diseases. In this review, we discussed different aspect of the NLRP3 inflammasome signaling pathways and focused on the effect of statin drugs on NLRP3 inflammasomes in association to atherosclerosis in order to elucidate possible targets for future research and clinical settings.

Acute coronary syndrome

Coronary atherosclerosis

Inflammation

NLRP3

NOD-like receptor

antiinflammatory agent

cryopyrin

hydroxymethylglutaryl coenzyme A reductase inhibitor

inflammasome

cryopyrin

hydroxymethylglutaryl coenzyme A reductase inhibitor

atherosclerosis

cardiovascular disease

disease association

drug efficacy

drug targeting

human

nonhuman

priority journal

protein assembly

protein family

protein function

randomized controlled trial (topic)

Review

signal transduction

animal

atherosclerosis

immunology

Animals

Atherosclerosis

Humans

Hydroxymethylglutaryl-CoA Reductase Inhibitors

NLR Family, Pyrin Domain-Containing 3 Protein