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The role of mitochondrial DNA damage in the development of atherosclerosis

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Abstract

Mitochondria are the cellular powerhouses, fuelling metabolic processes through their generation of ATP. However we now recognise that these organelles also have pivotal roles in producing reactive oxygen species (ROS) and in regulating cell death, inflammation and metabolism. Mitochondrial dysfunction therefore leads to oxidative stress, cell death, metabolic dysfunction and inflammation, which can all promote atherosclerosis. Recent evidence indicates that mitochondrial DNA (mtDNA) damage is present and promotes atherosclerosis through mitochondrial dysfunction. We will review the mechanisms that link mtDNA damage with atherosclerotic disease, and identify mitochondrial processes that may have therapeutic benefit.

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