# Modulation of heat shock proteins by statins

Forouzanfar F.

Butler A.E.

Banach M.

Barreto G.E.

Sahbekar A.

Heat shock proteins (HSP or stress proteins) are intracellular molecules that participate in physiological cell metabolism and growth, although they are known to be involved in many stress conditions. Statins inhibit the action of the enzyme 3-hydroxy-3-methylglutaryl-coenzyme A reductase (HMG-CoA), which is important in the synthesis of cholesterol and essential isoprenoid intermediates, thereby lowering circulating low-density lipoprotein cholesterol (LDL), a major risk factor for cardiovascular disease (CVD). This review provides new insights into the mechanisms of action of statins in the regulation of HSPs. A better understanding of this involvement can help in development of new and more effective treatment strategies for CVD. © 2018 Elsevier Ltd

Atherogenesis

Heat shock proteins

HMG-CoA

Statin

alpha crystallin

atorvastatin

beta crystallin

C reactive protein

calnexin

calreticulin

cerivastatin

chaperonin 60

cholesterol

fluindostatin

glucose regulated protein 78

glycoprotein gp 96

heat shock cognate protein 70

heat shock protein

heat shock protein 110

heat shock protein 27

heat shock protein 40

heat shock protein 47

heat shock protein 70

heat shock protein 90

high density lipoprotein cholesterol

hydroxymethylglutaryl coenzyme A reductase

hydroxymethylglutaryl coenzyme A reductase inhibitor

isoprenoid

low density lipoprotein cholesterol

mevinolin

rosuvastatin

simvastatin

triacylglycerol

unindexed drug

heat shock protein

hydroxymethylglutaryl coenzyme A reductase inhibitor

lipid

angiogenesis

atherosclerosis

cardiovascular disease

cholesterol blood level

cholesterol synthesis

drug mechanism

human

hypercholesterolemia

modulation

pleiotropy

priority journal

protein function

protein localization

Review

risk factor

triacylglycerol blood level

animal

blood

cardiovascular disease

complication

drug effect

dyslipidemia

metabolism

signal transduction

Animals

Cardiovascular Diseases

Dyslipidemias

Heat-Shock Proteins

Humans

Hydroxymethylglutaryl-CoA Reductase Inhibitors

Lipids

Signal Transduction