

The role of dietary lipid quality for the prevention of atherosclerotic cardiovascular disease (ASCVD)

Dietary Lipids

There is still an ongoing debate about the role of dietary lipids in the context of ASCVD prevention although there are clear guidelines for dietary recommendations. All recommendations including Mediterranean, DASH, Portfolio or plant-based diet aim to reduce the intake of unhealthy and to increase intake of healthy lipids. Among unhealthy lipids there are saturated and trans fatty acids; that are commonly found in red and processed meat including sausages, butter and cheese. Healthy lipids are monounsaturated and polyunsaturated fatty acids commonly found in vegetable and fish oil, seeds, nuts and whole grain products.

Evidence about the contribution of dietary fats to ASCVD prevention

The recent review by Christensen *et al* ⁽¹⁾ provides strong evidence for the causal relationship between dietary lipid quality and ASCVD; by addressing 3 points. First, plasma LDL particles increase the risk of ASCVD as convened by many publications including two EAS consensus papers ^(2,3). Indeed, the duration of exposure to elevated LDL-cholesterol levels is of paramount importance, leading to the conclusion that prevention through dietary and lifestyle intervention should be recommended as early in life as possible. Secondly this review demonstrates that the saturated fatty acids including palmitic, myristic and lauric as well as trans fatty acids increase plasma LDL-cholesterol levels. In contrast, the polyunsaturated linoleic and alpha-linolenic decrease plasma LDL-cholesterol, while the monounsaturated oleic and the very long chain polyunsaturated fatty acids EPA and DHA have only weak to neutral effects. Finally, the review concludes that observational and interventional studies demonstrate that the quality of dietary lipids affects LDL-cholesterol levels and thereby the risk of ASCVD. Dietician Jacob Christensen presented these data at the recent EAS 2024 conference in Lyon.

This summary of scientific evidence provides a clear answer on the role of dietary fats in ASCVD. The table below from Christensen *et al* ⁽¹⁾ is summary of diet and lifestyle interventions and their benefits on blood lipoproteins.

Toolbox of lifestyle interventions to improve blood lipids ⁽¹⁾

Lifestyle intervention	TC- and LDL-C-reducing effect	TC- reducing effect	HDL-C-increasing effect (a)
Reduce dietary SFA	+++	+	
Reduce dietary TFA	+++		+++
Avoid unfiltered coffee	+++	+++	
Reduce excessive body weight	++	+++	++
Reduce dietary cholesterol	+		
Reduce alcohol intake		+++	
Increase MUFAs and PUFAs in exchange for SFAs	+++	+	
Increase dietary fibre	++		+/-
Increase daily physical activity	+	++	+++
Increase MUFAs and PUFAs in exchange for sugars		++	++/+
Increase intake of fatty fish and omega-3		++	
Use foods with phytosterols/phytosteranols	++		

HDL-C, high-density lipoprotein; LDL-C, low-density lipoprotein; MUFA, monounsaturated fatty acids; PUFA, polyunsaturated fatty acids; SFA, saturated fatty acids; TC, total cholesterol; TFA, trans-fatty acids; TG, triglycerides. (a) HDL-C is not a causal risk factor for ASCVD; on population level, it can generally be interpreted as a marker of long-term exposure to plasma TG

To learn more about the role of dietary fats and healthy dietary patterns, visit the educational tool “Diet at the heart of CVD prevention” hosted under “Apps, tools & resources” at the EAS website. “<https://www.dietattheheart.com/>”

References

1. Christensen *et al.* Dietary fat quality, plasma atherogenic lipoproteins, and atherosclerotic cardiovascular disease: An overview of the rationale for dietary recommendations for fat intake. *Atherosclerosis* 389 (2024) 117433
2. Ference *et al.* Low-density lipoproteins cause atherosclerotic cardiovascular disease. 1. Evidence from genetic, epidemiologic, and clinical studies. A consensus statement from the European Atherosclerosis Society Consensus Panel, *Eur. Heart J.* 38 (2017) 2459–2472.
3. Borén *et al.* Low-density lipoproteins cause atherosclerotic cardiovascular disease: pathophysiological, genetic, and therapeutic insights: a consensus statement from the European Atherosclerosis Society Consensus Panel. *European Heart Journal* (2020) 41, 2313-2330