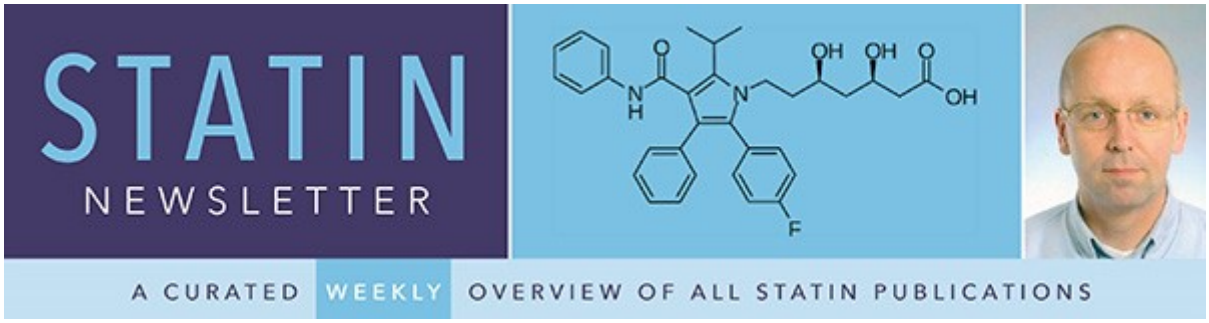

Update week 49 & 50 - 2022

Dr. Peter Lansberg is a Dutch lipidologist, educator and innovator. He has been instrumental in setting up The Dutch National Lipid Clinic Network, the Dutch Lipid Clinic Criteria for Familial Hypercholesterolemia (FH), and the Dutch National FH screening program

---

The Statin Newsletter will keep you up-to-date with all recent statin publications. Based on a curated approach to select relevant articles.

For live updates you can follow me on twitter

Key Publications

1. **Statins prevent NAFLD - NASH - Fibrosis**
2. **OMT important in Elderly post-PCI patients**
3. **When to start novel lipid lowering drugs**
4. **No increased cerebral bleeding risk observed in statin users**
5. **Proteomics confirm pleiotropic benefits of statins**

Evidence linking statin uses to prevent NAFLD, NASH and fibrosis

The use of statins, drugs commonly prescribed to lower cholesterol levels, may prevent non-alcoholic fatty liver disease (NAFLD) and lower the prevalence of non-alcoholic steatohepatitis (NASH) and fibrosis in patients with NAFLD, according to a new study. The study, which was performed on a large general population in the Rotterdam Study and a group of biopsy-proven NAFLD patients in the PERSONS cohort, found that statin use was inversely associated with NAFLD in the general population, NASH in the NAFLD group, and fibrosis in both groups. The results were then pooled with available literature in a meta-analysis, which showed significant inverse associations with NASH and fibrosis. In vitro experiments also showed that statins significantly reduced lipid droplet accumulation in human liver organoids and downregulated pro-inflammatory cytokines in macrophages. The study concluded that statin use was associated with a lower prevalence of NASH and fibrosis and might prevent NAFLD, and this may be due to their anti-lipid and anti-inflammatory effects

Ayada I, van Kleef LA, Zhang H *et al.* **Dissecting the multifaceted impact of statin use on fatty liver disease: a multidimensional study**. EBioMedicine 2023; 87:104392. http://www.ncbi.nlm.nih.gov/pubmed/?term=36502575

OMT important; even in elderly post-PCI patients

A new study has revealed that optimal medical therapy (OMT) after percutaneous coronary intervention (PCI) has beneficial effects on long-term clinical outcomes in patients aged over 80 years with coronary artery disease (CAD). The study found that the use of OMT in these patients was associated with a significant reduction in the risk of adverse clinical events after PCI, including all-cause death and nonfatal myocardial infarction (MI). The study was a multicenter observational study and analyzed the time to the first major adverse clinical event, including death or nonfatal MI, for up to 3 years after PCI using multicenter registry data. The data included 1,056 patients aged over 80 years successfully treated with PCI. OMT was defined as a combination of antiplatelet drug, statin, beta-blocker, and angiotensin-converting enzyme inhibitor/angiotensin II receptor blocker. The results showed that the beneficial effects of OMT on the risk of adverse clinical events remained significant in the propensity score-matched data, suggesting that OMT might be safe and effective for well selected patients aged over 80 years with CAD treated by PCI.

Nakamura T, Horikoshi T, Kobayahi T *et al.* Optimal medical therapy after percutaneous coronary intervention in very elderly patients with coronary artery disease. Int J Cardiol Cardiovasc Risk Prev **2023; 16:200162. http://www.ncbi.nlm.nih.gov/pubmed/?term=36506909**

When to add novel lipid lowering drugs; a step by step approach

Dyslipidemia is a significant risk factor for atherosclerotic cardiovascular disease (ASCVD). Despite an increase in high-intensity statin prescription, a substantial number of patients are still unable to reach the recommended goals. Several new lipid-lowering medications have been approved in the past decade including PCSK9 inhibitors, ATP-citrate lyase inhibitors, angiopoietin-like 3 inhibitors, lomitapide, and icosapent ethyl. Although approved, these drugs are under-prescribed worldwide due to cost, lack of cardiovascular outcomes, or unfamiliarity among clinicians. In this review, a practical stepwise approach is proposed to help clinicians prescribe these novel lipid-lowering medications to achieve treatment goals and reduce the risk of ASCVD. Advances in gene silencing technology, such as antisense oligonucleotides and siRNA, are being used to target genes that play a crucial role in dyslipidemia. New lipid-modifying agents that target other lipids besides LDL-C, including HDL-C, TG, and Lp(a), are also being explored. It is essential to have proper knowledge about these newer agents to reach treatment goals and reduce morbidity and mortality from ASCVD. Additional outcomes data and future guideline recommendations may shed light on the future of ASCVD risk reduction.

Kakavand H, Aghakouchakzadeh M, Shahi A *et al.* A stepwise approach to prescribing novel lipid-lowering medications. J Clin Lipidol **2022; 16:822-832. http://www.ncbi.nlm.nih.gov/pubmed/?term=36522804**

Cerebral bleeding risk with statin therapy – meta-analysis

A meta-analysis of 29 randomized controlled trials with 145,929 participants found that statin therapy is not associated with increased risk of bleeding or intracranial hemorrhage (ICH). The meta-analysis followed participants for a median of 3.65 years for bleeding events and 3.95 years for ICH. Although there was a subgroup analysis that showed an increased risk of ICH in patients with a prior stroke, these results were not robust and could be driven by a single study. The meta-analysis aimed to address the concern of bleeding events in statin therapy by pooling data from large sample size RCTs with a follow-up duration of more than three months to decrease the possibility of random error. The result supports the notion that statin therapy is not associated with the risk of bleeding or ICH.

Liu X, Zhu H, Zheng H *et al.* Stains therapy and the risk of all bleeding and intracranial hemorrhage: A meta-analysis of randomized controlled studies. J Evid Based Med **2022; 15:373-384. http://www.ncbi.nlm.nih.gov/pubmed/?term=36510635**

Proteomic analyses reveals the pleiotropic effects of statins

A new study has compared the proteome of statin users to non-users in order to determine whether statin use is associated with proteins unrelated to lipid metabolism. The study found that statin users had 11 enriched and 11 depleted protein levels compared to non-users, with many of the proteins having previously been linked to various non-

cardiovascular conditions. The results of the study suggest that statins have a pleiotropic effect on the body, influencing not just lipid metabolism, but also other biological processes related to conditions such as neurologic function, diabetes, metabolism, and cancer. The study provides valuable information on the potential biological mechanisms underlying the pleiotropic effect of statins, which will inform future efforts to identify statin users at risk of rare non-atherosclerotic outcomes and to identify the health benefits of statin use independent of LDL-C reduction.
Bohn B, Lutsey PL, Tang W *et al.* **A proteomic approach for investigating the pleiotropic effects of statins in the atherosclerosis risk in communities (ARIC) study.** J Proteomics 2023; 272:104788. http://www.ncbi.nlm.nih.gov/pubmed/?term=36470581

Relevant Publications

1. Hou Q, Chen Y, Zhang Y, Pang C. Comparative Muscle Tolerability of Different Types and Intensities of Statins: A Network Meta-Analysis of Double-Blind Randomized Controlled Trials. Cardiovasc Drugs Ther 2022. http://www.ncbiCornelis L, Duyck J, Dedeurwaerdere F *et al.* Statin-induced necrotizing autoimmune myopathy (SINAM): case report and review of the literature. Acta clinica Belgica 2022:1-6. http://www.ncbi.nlm.nih.gov/pubmed/?term=36511106
2. Kuronuma K, Yagi T, Sugai S *et al.* Effect of Atorvastatin on Microcirculation Evaluated by Vascular Occlusion Test with Peripheral Near-Infrared Spectroscopy. Advances in experimental medicine and biology 2022; 1395:351-356. http://www.ncbi.nlm.nih.gov/pubmed/?term=36527661
3. Becchetti C, Dirchwolf M, Berzigotti A, Bosch J. Letter: PCSK9 inhibitor for liver transplant patients during the post-statin era? Authors' reply. Alimentary pharmacology & therapeutics 2023; 57:187-188. http://www.ncbi.nlm.nih.gov/pubmed/?term=36480715
4. Wang J, Wu J, He Z, Xin H. Letter: PCSK9 inhibitor for liver transplant patients during the post-statin era? Alimentary pharmacology & therapeutics 2023; 57:185-186. http://www.ncbi.nlm.nih.gov/pubmed/?term=36480716
5. Dixon DL. The impact of PCSK9 modulation on cardiovascular outcomes: recent advances and the managed care implications. The American journal of managed care 2022; 28:S139-s147. http://www.ncbi.nlm.nih.gov/pubmed/?term=36493346
6. Chang M, O'Brien-Irr M, Montross B *et al.* Impact of Statins on Survival and Limb Salvage in Patients Undergoing Peripheral Endovascular Intervention for Chronic Limb-Threatening Ischemia. Annals of vascular surgery 2022. http://www.ncbi.nlm.nih.gov/pubmed/?term=36503021
7. Christensen JJ, Bogsrud MP, Holven KB *et al.* Use of statins and other lipid-modifying agents across pregnancy: A nationwide drug utilization study in Norway in 2005-2018. Atherosclerosis 2022. http://www.ncbi.nlm.nih.gov/pubmed/?term=36522216
8. Snyman JR, Snyman KR. A retrospective study: efficacy of an originator versus a generic formulation of simvastatin in patients who suffer from hyperlipidaemia. Cardiovascular journal of Africa 2022; 33:1-8. http://www.ncbi.nlm.nih.gov/pubmed/?term=36479888
9. Ni Q, Zhu J, Li Z *et al.* Simvastatin promotes rat Achilles tendon-bone interface healing by promoting osteogenesis and chondrogenic differentiation of stem cells. Cell Tissue Res 2023; 391:339-355. http://www.ncbi.nlm.nih.gov/pubmed/?term=36513828
10. Watanabe H, Morimoto T, Yamamoto K *et al.* Prevalence and Effects of High-Intensity Statins for Japanese Patients Presenting With Acute Coronary Syndrome - A Post Hoc Secondary Analysis of STOPDAPT-2 ACS. Circulation journal : official journal of

the Japanese Circulation Society 2022. http://www.ncbi.nlm.nih.gov/pubmed/?term=36477579
11. Liu Y, Guo C, Chen L, Huang Z. 68Ga-FAPI PET/CT in a Patient With Statin-Induced Rhabdomyolysis. Clinical nuclear medicine 2023; 48:77-78. http://www.ncbi.nlm.nih.gov/pubmed/?term=36469065
12. Kashiwagi M, Taruya A, Kuroi A *et al.* Prevalence of low-attenuation plaques and statin therapy in plaque rupture type of acute coronary syndrome. Coronary artery disease 2023; 34:11-17. http://www.ncbi.nlm.nih.gov/pubmed/?term=36484215
13. Chauhan D, Memon F, Patwardhan V *et al.* Comparing Simvastatin Monotherapy V/S Simvastatin-Ezetimibe Combination Therapy for the Treatment of Hyperlipidemia: A Meta-Analysis and Review. Cureus 2022; 14:e31007. http://www.ncbi.nlm.nih.gov/pubmed/?term=36475227
14. Jamil S, Batool S, Shaik TA *et al.* Effect of Statin Therapy on Mortality and Recurrence of Intracerebral Hemorrhage in Patients With Spontaneous Intracerebral Hemorrhage. Cureus 2022; 14:e31150. http://www.ncbi.nlm.nih.gov/pubmed/?term=36483888
15. Mehta A, Jain P, Patil R *et al.* Real-World Clinical Experience of Rosuvastatin as a Lipid-Lowering Therapy for Primary and Secondary Prevention of Cardiovascular Events (REAL ROSE). Cureus 2022; 14:e31468. http://www.ncbi.nlm.nih.gov/pubmed/?term=36523717
16. Shahid R, Naik SS, Ramphall S *et al.* Neurocognitive Impairment in Cardiovascular Disease Patients Taking Statins Versus Proprotein Convertase Subtilisin/Kexin Type 9 (PCSK9) Inhibitors: A Systematic Review. Cureus 2022; 14:e30942. http://www.ncbi.nlm.nih.gov/pubmed/?term=36465767
17. Gupta J, Gupta R. PCSK9 Biomarker and Key Modulator for Cardiovascular Disorders: Heralding a New Therapeutic Era and their Future Perspectives. Current molecular pharmacology 2022. http://www.ncbi.nlm.nih.gov/pubmed/?term=36476440
18. Byambasuren O, Hattingh L, Jones M *et al.* Two Decades of Overuse and Underuse of Interventions for Primary and Secondary Prevention of Cardiovascular Diseases: A Systematic Review. Curr Probl Cardiol 2023; 48:101529. http://www.ncbi.nlm.nih.gov/pubmed/?term=36493917
19. Edward Penson P, Banach M, McCloskey A. Which statin is best for the kidneys? Current vascular pharmacology 2022. http://www.ncbi.nlm.nih.gov/pubmed/?term=36476436
20. Yun B, Ahn SH, Oh J *et al.* Statin use is associated with better post-operative prognosis among patients with hepatitis B virus-related hepatocellular carcinoma. European journal of clinical investigation 2022:e13936. http://www.ncbi.nlm.nih.gov/pubmed/?term=36504405
21. Ward NC, Reid CM, Watts GF. Low-density lipoprotein-cholesterol lowering effect of a nutraceutical regimen with or without ezetimibe in hypercholesterolaemic patients with statin intolerance. Frontiers in cardiovascular medicine 2022; 9:1060252. http://www.ncbi.nlm.nih.gov/pubmed/?term=36505352
22. Zhang Z, Deng C, Ma X *et al.* The association between statin use and osteoarthritis-related outcomes: An updated systematic review and meta-analysis. Frontiers in pharmacology 2022; 13:1003370. http://www.ncbi.nlm.nih.gov/pubmed/?term=36506528
23. Kaur G, Jones M, Howes L, Hattingh HL. Systematic review and meta-analysis of the association between all-cause mortality and statin therapy in patients with preserved ejection fraction heart failure (HFpEF). Int J Cardiol 2023; 372:63-70. http://www.ncbi.nlm.nih.gov/pubmed/?term=36496040
24. Toso A, Leoncini M, Magnaghi G *et al.* Rationale and design of COLchicine On-admission to Reduce inflammation in Acute Coronary Syndrome (COLOR-ACS) study. Journal of cardiovascular medicine (Hagerstown, Md.) 2023; 24:52-58. http://www.ncbi.nlm.nih.gov/pubmed/?term=36473121
25. Bancks MP, Lovato J, Balasubramanyam A *et al.* Association of type 2 diabetes subgroups with cognitive status without modification from lifestyle intervention. J Clin Endocrinol Metab 2022. http://www.ncbi.nlm.nih.gov/pubmed/?term=36472933

26. Newman CB, Tobert JA. Targeting PCSK9 with Antibodies and Gene Silencing to Reduce LDL-cholesterol. J Clin Endocrinol Metab 2022. http://www.ncbi.nlm.nih.gov/pubmed/?term=36469793
27. Asakura K, Minami Y, Nagata T *et al.* Impact of the eicosapentaenoic acid to arachidonic acid ratio on plaque characteristics in statin-treated patients with coronary artery disease. J Clin Lipidol 2022. http://www.ncbi.nlm.nih.gov/pubmed/?term=36517412
28. Aygun S, Tokgozoglu L. Comparison of Current International Guidelines for the Management of Dyslipidemia. Journal of clinical medicine 2022; 11. http://www.ncbi.nlm.nih.gov/pubmed/?term=36498823
29. Haegele M, Djurdjevic A, Jordan F *et al.* Achievement of Low-Density Lipoprotein Cholesterol Targets in Cardiac Rehabilitation: Impact of the 2019 ESC/EAS Dyslipidaemia Guidelines. Journal of clinical medicine 2022; 11. http://www.ncbi.nlm.nih.gov/pubmed/?term=36498631
30. Su CH, Islam MM, Jia G, Wu CC. Statins and the Risk of Gastric Cancer: A Systematic Review and Meta-Analysis. Journal of clinical medicine 2022; 11. http://www.ncbi.nlm.nih.gov/pubmed/?term=36498753
31. Bhattacharjee P, Rutland N, Iyer MR. Targeting Sterol O-Acyltransferase/Acyl-CoA:Cholesterol Acyltransferase (ACAT): A Perspective on Small-Molecule Inhibitors and Their Therapeutic Potential. Journal of medicinal chemistry 2022; 65:16062-16098. http://www.ncbi.nlm.nih.gov/pubmed/?term=36473091
32. Oleksiak A, Kępka C, Kępka C *et al.* HDL cholesterol, triglycerides and characteristics of coronary atherosclerosis in patients with newly diagnosed significant coronary artery disease by CTCA. Kardiol Pol 2022. http://www.ncbi.nlm.nih.gov/pubmed/?term=36475513
33. Park CS. Reclassification of Cardiovascular Risk Based on the Presence of Carotid Plaque Regarding Statin Eligibility in Low to Moderate Risk Patients. Korean Circ J 2022; 52:901-902. http://www.ncbi.nlm.nih.gov/pubmed/?term=36478653
34. Yoon M, Lee CJ, Park S, Lee SH. Statins and Clinical Outcomes in Patients With Low to Moderate Risk but With Non-obstructive Carotid Plaques: The SCOPE-CP Study. Korean Circ J 2022; 52:890-900. http://www.ncbi.nlm.nih.gov/pubmed/?term=36478652
35. Barge-Caballero E, Marcos-Rodríguez PJ, Domenech-García N *et al.* Survival impact of previous statin therapy in patients hospitalized with COVID-19. Med Clin (Engl Ed) 2023; 160:1-9. http://www.ncbi.nlm.nih.gov/pubmed/?term=36504601
36. Kim J, Jang W. Safety of prescribed herbal medicines for hepatic and renal function of polypharmacy patients with stroke: A single-center retrospective study. Medicine (Baltimore) 2022; 101:e32147. http://www.ncbi.nlm.nih.gov/pubmed/?term=36482592
37. Svec A, Adameova A. Facts and ideas on statins with respect to their lipophilicity: a focus on skeletal muscle cells and bone besides known cardioprotection. Molecular and cellular biochemistry 2022:1-7. http://www.ncbi.nlm.nih.gov/pubmed/?term=36471123
38. Rodriguez D, Lavie CJ, Elagizi A, Milani RV. Update on Omega-3 Polyunsaturated Fatty Acids on Cardiovascular Health. Nutrients 2022; 14. http://www.ncbi.nlm.nih.gov/pubmed/?term=36501174
39. Hammershaimb B, Goitia J, Gyurjian K *et al.* Racial and Ethnic Differences in Risk Factors and Outcomes in Adults With Acute Myocardial Infarction. The Permanente journal 2022:1-9. http://www.ncbi.nlm.nih.gov/pubmed/?term=36464782
40. Saseen JJ, Virani SS. Lipid lowering therapy in 2022 and beyond - How far we have come. Prog Cardiovasc Dis 2022; 75:1-3. http://www.ncbi.nlm.nih.gov/pubmed/?term=36503836
41. Scheen AJ, Wallemacq C, Lancellotti P. [Inclisiran (Leqvio®), a potent cholesterol-lowering agent by inhibiting PCSK9 using small interfering RNA-based innovative therapy]. Revue medicale de Liege 2022; 77:745-751. http://www.ncbi.nlm.nih.gov/pubmed/?term=36484754
42. Maadani M, Sarraf NS, Alilou S *et al.* Relationship Between Preprocedural Lipid Levels and Periprocedural Myocardial Injury in Patients Undergoing Elective Percutaneous Coronary Intervention. Texas Heart Institute journal / from the Texas

Heart Institute of St. Luke's Episcopal Hospital, Texas Children's Hospital 2022; 49. http://www.ncbi.nlm.nih.gov/pubmed/?term=36515930
43. Liu J, Zhao D, Hao YC *et al.* [Low-density lipoprotein cholesterol levels and lipid-lowering treatment status among young and middle-aged ultra-high-risk patients with acute coronary syndrome in China]. Zhonghua xin xue guan bing za zhi 2022; 50:1161-1168. http://www.ncbi.nlm.nih.gov/pubmed/?term=36517436
44. Ahoussougbemey Mele A, Mahmood R, Ogbuagu H, Fombi J. Hyperlipidemia in the Setting of Primary Biliary Cholangitis: A Case Report and Review of Management Strategies. Cureus 2022; 14:e31411. http://www.ncbi.nlm.nih.gov/pubmed/?term=36523736
45. Zipinotti Dos Santos D, Santos Guimaraes ID, Hakeem-Sanni MF *et al.* Atorvastatin improves cisplatin sensitivity through modulation of cholesteryl ester homeostasis in breast cancer cells. Discov Oncol 2022; 13:135. http://www.ncbi.nlm.nih.gov/pubmed/?term=36481936
46. Karkeet RM, Zekri AN, Sayed-Ahmed MM *et al.* The prognosis of lipid reprogramming with the HMG-CoA reductase inhibitor, rosuvastatin, in castrated Egyptian prostate cancer patients: Randomized trial. PLoS One 2022; 17:e0278282. http://www.ncbi.nlm.nih.gov/pubmed/?term=36480560

Basic Science

1. Mandati P, Dumpa N, Alzahrani A *et al.* Hot-Melt Extrusion-Based Fused Deposition Modeling 3D Printing of Atorvastatin Calcium Tablets: Impact of Shape and Infill Density on Printability and Performance. AAPS PharmSciTech 2022; 24:13. http://www.ncbi.nlm.nih.gov/pubmed/?term=36477554
2. Sun J, Xu W, Wu Z *et al.* Immunomodulatory effects of atorvastatin on MRL/lpr mice. Adv Rheumatol 2022; 62:47. http://www.ncbi.nlm.nih.gov/pubmed/?term=36471414
3. Hardeep, Pandey NK, Singh SK *et al.* Development and Validation of Reverse-Phase High-Performance Liquid Chromatography Based Bioanalytical Method for Estimation of Simvastatin in Rat's Plasma. Assay and drug development technologies 2022; 20:349-358. http://www.ncbi.nlm.nih.gov/pubmed/?term=36473162
4. Balraj J, Murugesan T, Dhanapal AR *et al.* Bioconversion of lovastatin to simvastatin by Streptomyces carpaticus toward the inhibition of HMG-CoA activity. Biotechnol Appl Biochem 2022. http://www.ncbi.nlm.nih.gov/pubmed/?term=36524308
5. Pereira-da-Mota AF, Vivero-Lopez M, Garg P *et al.* In vitro-in vivo correlation of drug release profiles from medicated contact lenses using an in vitro eye blink model. Drug delivery and translational research 2022. http://www.ncbi.nlm.nih.gov/pubmed/?term=36528710
6. Kim JM, Kim H, Oh SH *et al.* Combined Administration of Pravastatin and Metformin Attenuates Acute Radiation-Induced Intestinal Injury in Mouse and Minipig Models. Int J Mol Sci 2022; 23. http://www.ncbi.nlm.nih.gov/pubmed/?term=36499155
7. Eita AS, Makky AMA, Anter A, Khalil IA. Atorvastatin-loaded emulsomes foam as a topical antifungal formulation. Int J Pharm X 2022; 4:100140. http://www.ncbi.nlm.nih.gov/pubmed/?term=36465276
8. El Shafei SF, Raafat SN, Amin AH, Rizk FN. Effect of local application of platelet-rich fibrin scaffold loaded with simvastatin on peri-implant bone changes. J Indian Prosthodont Soc 2022; 22:152-160. http://www.ncbi.nlm.nih.gov/pubmed/?term=36511026
9. Marunouchi T, Fujita K, Takahashi K *et al.* Simvastatin attenuates the c-Raf/Erk and calcineurin-NFATc2 pathways via inhibition of Hsp90 activity during the development of heart failure. Journal of pharmacological sciences 2023; 151:17-27. http://www.ncbi.nlm.nih.gov/pubmed/?term=36522119

10. Päth G, Perakakis N, Mantzoros CS, Seufert J. PCSK9 inhibition and cholesterol homeostasis in insulin producing β-cells. Lipids Health Dis 2022; 21:138. http://www.ncbi.nlm.nih.gov/pubmed/?term=36527064
11. Noitem R, Pongkorpsakol P, Changsen C *et al.* Natural statin derivatives as potential therapy to reduce intestinal fluid loss in cholera. PLoS Negl Trop Dis 2022; 16:e0010989. http://www.ncbi.nlm.nih.gov/pubmed/?term=36490300
12. Bakhaidar RB, Naveen NR, Basim P *et al.* Response Surface Methodology (RSM) Powered Formulation Development, Optimization and Evaluation of Thiolated Based Mucoadhesive Nanocrystals for Local Delivery of Simvastatin. Polymers (Basel) 2022; 14. http://www.ncbi.nlm.nih.gov/pubmed/?term=36501579
13. Chan JMS, Park SJ, Ng M *et al.* Translational Molecular Imaging Tool of Vulnerable Carotid Plaque: Evaluate Effects of Statin Therapy on Plaque Inflammation and American Heart Association-Defined Risk Levels in Cuff-Implanted Apolipoprotein E-Deficient Mice. Translational stroke research 2022. http://www.ncbi.nlm.nih.gov/pubmed/?term=36481841
14. Ciric D, Kravic-Stevovic T, Bumbasirevic V *et al.* Effects of metformin and simvastatin treatment on ultrastructural features of liver macrophages in HFD mice. Ultrastructural pathology 2023; 47:1-11. http://www.ncbi.nlm.nih.gov/pubmed/?term=36520527

To subscribe to the Statin Literature Update Service Click HERE

Facebook Twitter Website

mailing address:
lansberg@gmail.com