Section: MONOGRAPH
Abstract: MON-01

New pharmacological interventions for lipoprotein(a) reduction and prevention of cardiovascular events: A systematic review

Laís de Barros Glaeser; Sofia Torres Velloso
Centro Universitário FMABC, Santo André, Brazil
laisglaeser@gmail.com

INTRODUCTION: Cardiovascular diseases remain the leading cause of global mortality, with atherosclerosis as a central mechanism. Lipoprotein(a) [Lp(a)] is an independent and highly atherogenic risk factor associated with vascular inflammation and thrombosis. Statins do not reduce Lp(a) levels and may even increase them, contributing to residual cardiovascular risk. Novel therapies targeting Lp(a) have emerged as promising strategies. **METHODS**: A systematic review was conducted according to PRISMA guidelines using PubMed (2016–2026). Clinical trials (phases I–IV) in humans with ≥50 participants and quantitative Lp(a) reduction data were included. Search terms addressed Lp(a), gene silencing, and lipid-lowering therapies. Twelve studies met inclusion criteria. **RESULTS**: Gene-silencing therapies showed the greatest reductions in Lp(a), with olpasiran, lepodisiran, and zerlasiran achieving reductions above 80–95%. Pelacarsen reduced Lp(a) by up to 80% in a dose-dependent manner. Muvalaplin reduced Lp(a) by up to 85% by inhibiting particle formation. PCSK9 inhibitors such as alirocumab and recaticimab showed moderate reductions (~28–36%), while inclisiran had modest effects (≈15–26%). Treatments were generally well tolerated. **DISCUSSION**: RNA-based therapies, particularly siRNA and antisense oligonucleotides, demonstrate superior efficacy by directly targeting apolipoprotein(a) synthesis. Alternative approaches such as muvalaplin expand therapeutic options by interfering with particle assembly. **CONCLUSION**: Emerging Lp(a)-targeted therapies represent a major advance in addressing residual cardiovascular risk, though outcome trials are still needed.

KEYWORDS: Lipoprotein(a); Atherosclerosis; Gene therapy; Cardiovascular diseases.

ABCS Health Sci. 2026;51(Suppl.):e0261032
https://doi.org/10.7322/2026comuabc51.mon01