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Beyond Statins: Emerging Lipid-Lowering Therapies for Atherosclerotic Cardiovascular Disease (ASCVD)

¹Alvina Christiana B, ¹Jona Joy, ¹Shanila Thankam Suresh, ¹Nandini Goswami, ¹Anil Dhakal*

¹Doctor of pharmacy, department of pharmacy practice, krupanidhi college of pharmacy Bangalore 560035

Corresponding author: Alvina Christiana B.

Email id: serviceheb@gmail.com ; alvinachristiana0@gmail.com

ABSTRACT

Background:

Statins have long been the cornerstone of lipid-lowering therapy for the prevention and management of atherosclerotic cardiovascular disease (ASCVD). Despite their proven efficacy, a significant proportion of patients remain at high residual cardiovascular risk due to statin intolerance, inadequate LDL-C lowering, or other lipid-related abnormalities.

Objective:

This review aims to provide an up-to-date overview of emerging lipid-lowering therapies that extend beyond statins, focusing on their mechanisms of action, clinical efficacy, and integration into contemporary lipid management.

Methods:

We analyzed data from key randomized controlled trials, consensus statements, and recent clinical guidelines to evaluate the efficacy, safety, and clinical roles of novel therapies including PCSK9 inhibitors, inclisiran, bempedoic acid, ezetimibe, antisense and siRNA-based agents targeting lipoprotein(a) and ApoC-III, and triglyceride-lowering interventions.

Results:

New agents demonstrate substantial LDL-C and triglyceride reductions, improved patient adherence, and favorable cardiovascular outcomes in high-risk populations. Therapies targeting lipoprotein(a), ApoC-III, and ANGPTL3 represent promising tools for future risk reduction. Combination and personalized approaches tailored to individual lipid profiles and genetic risk factors are now recommended in updated guidelines.

Conclusion:

Emerging lipid-lowering therapies offer significant promise in reducing residual ASCVD risk, particularly when integrated into a comprehensive, personalized treatment strategy. The evolving

therapeutic landscape heralds a shift toward precision lipidology and underscores the need for broader access and clinician education to optimize patient outcomes.

Keywords: Atherosclerotic Cardiovascular Disease (ASCVD), lipid-lowering therapy, PCSK9 inhibitors, inclisiran, bempedoic acid, lipoprotein(a), triglycerides, ApoC-III inhibition, ANGPTL3, statin intolerance

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