

SEMINAR

NIACIN PARADOX

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Thiripurasundari,
G12, D batch
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The "niacin paradox" refers to a curious phenomenon observed with niacin, also known as vitamin B3. Niacin is often used to improve lipid profiles by raising levels of high-density lipoprotein (HDL) cholesterol, often referred to as "good" cholesterol. However, in some cases, despite its beneficial effects on HDL cholesterol, niacin fails to demonstrate a corresponding reduction in cardiovascular events, such as heart attacks and strokes.

This apparent paradox has puzzled researchers and clinicians for years. Several hypotheses have been proposed to explain it. Niacin's impact on lipid profiles is not limited to raising HDL cholesterol; it also lowers levels of low-density lipoprotein (LDL) cholesterol and triglycerides. The complex interplay between these lipid fractions might obscure the expected benefits of increased HDL cholesterol alone.

Niacin has various effects beyond lipid metabolism, including effects on inflammation, endothelial function, and glucose metabolism. These off-target effects could influence cardiovascular outcomes independently of changes in lipid levels. Niacin can cause side effects such as flushing, itching, and gastrointestinal symptoms, which may lead to poor adherence to treatment or discontinuation. Adverse effects could counteract any potential benefits, contributing to the niacin paradox.

Some studies investigating niacin's cardiovascular effects have been criticized for methodological limitations, such as short duration, small sample sizes, and inadequate control groups. These limitations could affect the reliability and generalizability of the findings.

Different patient populations may respond differently to niacin treatment based on factors such as age, sex, genetic predisposition, and baseline cardiovascular risk. Failure to account for these factors adequately could obscure the true effects of niacin on cardiovascular outcomes.

Despite the niacin paradox, niacin remains a therapeutic option in certain clinical scenarios, such as in patients with severe hypertriglyceridemia or low HDL cholesterol levels who are at high risk for cardiovascular events. However, its use has become less common in recent years due to the availability of more potent and better-tolerated lipid-lowering therapies, such as statins and PCSK9 inhibitors.

In conclusion, while niacin's effects on lipid profiles are well-established, its impact on cardiovascular outcomes remains a topic of debate and ongoing research. Understanding the

niacin paradox requires consideration of its complex mechanisms of action, potential off-target effects, and nuances in study design and patient populations.