

Abstract

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The oxidative modification hypothesis of atherosclerosis: the comparison of atherogenic effects on oxidized LDL and remnant lipoproteins in plasma.

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BACKGROUND: A tremendous number of articles on oxidized LDL (Ox-LDL) and scavenger receptor in macrophage have been published since Steinberg proposed Ox-LDL hypothesis as the major cause of atherosclerosis. This hypothesis has provided strong support for the efficacy of LDL lowering drugs, indicating that lowering LDL means lowering Ox-LDL in vivo.

OBJECTIVE: This manuscript proposed a new oxidative modification hypothesis that remnant lipoproteins determined as remnant-like lipoprotein particles (RLP), not LDL are the major oxidized lipoproteins in plasma, resulting from the plasma concentration of these oxidized lipoproteins.

RESULTS: Remnant lipoproteins may play a pivotal role for the initiation of atherosclerosis via lectin-like oxidized LDL receptor-1 (LOX-1) in endothelial cells. Isolated remnant lipoproteins were found to be oxidized or susceptible to be oxidized in plasma, not necessary to be further oxidized in vitro as Ox-LDL. High similarity of proatherogenic and proinflammatory properties of isolated Ox-LDL and remnant lipoproteins have been reported and predicted the presence of similar oxidized phospholipids in both lipoproteins as bioactive components.

CONCLUSION: These results suggest the possibility that reducing plasma remnant lipoproteins rather than LDL should be the target for hyperlipidemic therapy especially in patients with metabolic syndrome for the prevention of endothelial dysfunction in the initiation of atherosclerosis.

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