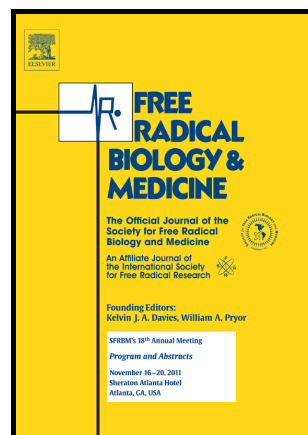


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Low-density lipoprotein oxidation biomarkers in human health and disease and effects of bioactive compounds*

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Abstract

Based on the significance of oxidized low-density lipoprotein (LDL) in health and disease, this review focuses on human studies addressing oxidation of LDL, including three lines of biomarkers, (i) *ex vivo* LDL resistance to oxidation, a “challenge test” model, (ii) circulating oxidized LDL, indicating the “current *in vivo* status”, and (iii) autoantibodies against oxidized LDL as fingerprints of an immune response to oxidized LDL, along with circulating oxysterols and 4-hydroxynonenal as biomarkers of lipid peroxidation. Lipid peroxidation and oxidized LDL are hallmarks in the development of various metabolic, cardiovascular and other diseases. Changes further occur across life stages from infancy to older age as well as in

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