

Approximately **50%** of heart attacks and strokes occur in patients with '**normal**' cholesterol levels¹.

INFLAMMATORY BIOMARKERS

Cleveland HeartLab, Inc. offers inflammatory biomarker testing to help practitioners evaluate cardiovascular risk in patients. This group of tests covers a patient's biomarker profile which may result from lifestyle concerns (F₂-IsoPs) to the development of metabolic or cardiovascular disease (OxLDL, hsCRP, Urinary Microalbumin) and formation of vulnerable plaque and increased risk for an adverse event (Lp-PLA₂, MPO).



Myeloperoxidase (MPO) is a vascular-specific inflammatory enzyme released by white blood cells into the bloodstream in response to vulnerable plaque, erosions, or fissures in the artery wall. Elevated MPO levels are associated with risk of cardiac events in subgroups otherwise characterized as low risk^{3,4}, and may assist cardiovascular risk prediction when used independently or alongside standard biomarker testing such as hsCRP⁵.

Lp-PLA₂ (The PLAC[®] Test) is a vascular-specific inflammatory enzyme that increases with the activation of macrophages in the atherosclerosis lesions of the artery wall under the collagen cap. Elevated levels of Lp-PLA₂ are associated with risk of future adverse cardiac⁶ and cerebrovascular events⁷.

High-Sensitivity CRP (hsCRP) is a highly-sensitive quantification of CRP, an acute-phase protein released into the blood by the liver during inflammation. Elevated hsCRP levels are associated with the risk of future adverse cardiovascular events in apparently healthy individuals⁸ and individuals with stable coronary artery disease⁹. Reductions of hsCRP and LDL cholesterol are associated with a reduction in the rate of atherosclerotic progression¹⁰ and improved clinical outcomes¹¹.

Urinary Microalbumin (MACR) is the quantification of small amounts of albumin, a serum protein, in the urine which assesses the functioning and integrity of the kidneys. Elevated urinary microalbumin levels are associated with endothelial dysfunction and increased risk in cardiovascular morbidity and mortality¹².

Oxidized LDL (OxLDL) is formed when the ApoB protein on LDL particles becomes oxidized. Elevated OxLDL levels are associated with an increased risk of metabolic syndrome¹³ and coronary heart disease¹⁴ in healthy individuals. Thus, elevated OxLDL levels may be caused by lifestyle.

F₂-Isoprostanes (F₂-IsoPs) are the 'gold standard' for measuring oxidative stress in the body. Increased oxidative stress may be the result of excessive red meat intake¹⁵ or reduced activity levels¹⁶. Elevated F₂-IsoPs levels are present in individuals with lifestyle-related risk for atherosclerosis¹⁷ and cancer^{18,19}, including smoking, deconditioning and poor diet.