Tracking a Killer Molecule
The Oxidized LDL Triple Marker Test
Shiel’s Oxidized LDL Triple Marker Test...

- Most powerful combination of biomarkers for identifying patients with Coronary Artery Disease.
- Clinically proven, innovative Cardiovascular Disease risk assessment test.++*
- Potential replacement for all current blood lipid tests, including Total Cholesterol and LDL-Cholesterol.
- The only blood test that identifies Atherosclerotic Disease activity in the artery wall.

<table>
<thead>
<tr>
<th>Pathophysiological Component</th>
<th>Corresponding Biomarker</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Atherogenesis</td>
<td>1. Oxidized LDL (OxLDL)</td>
</tr>
<tr>
<td>2. Anti-Atherogenesis</td>
<td>2. High-Density Lipoprotein (HDL)</td>
</tr>
<tr>
<td>3. Inflammation</td>
<td>3. High-Sensitivity CRP (hs-CRP)</td>
</tr>
</tbody>
</table>

- Combines three pathophysiological components of the Atherosclerotic Disease process with three corresponding biomarkers. Risk stratification presented with a calculation of OxLDL to HDL. hsCRP is presented separately as an independent risk factor for CVD.
- Identifies significantly more patients with Coronary Artery Disease than all other currently available biomarker tests.
- Enhancement to traditional lipid testing yielding increased detection of sub-clinical coronary artery disease, and improved monitoring of patient response to clinician recommended therapies.
- The Coronary Artery Disease process cannot initiate or progress without the oxidation of LDL Cholesterol.
- Easy to understand test results aid in patient compliance to physician recommendations for improved cardiovascular health.

**TRACKING A KILLER MOLECULE - Involvement of Oxidized LDL in the initiation and progression of the atherosclerotic disease process**

- Normal Artery
- Fatty Streak
- Fibrous Plaque
- Complicated Plaque
- Ruptured Plaque

- Unstable Angina
- MI
- Stroke
- Critical Leg Ischemia
- Coronary Death
Oxidized LDL
Oxidized LDL is the atherogenic form of LDL. It is a plaque-specific lipoprotein that plays a key role in the atherosclerotic disease process, particularly in the deposition of cholesterol in the artery wall plaque. Found primarily in the atherosclerotic plaque and NOT in normal arteries, Oxidized LDL is directly involved in the initiation and progression of atherosclerosis: from the early-stage conversion of monocyte/macrophages into cholesterol-laden foam cells, to the late-stage development of plaque instability and rupture.

HDL
High-density-lipoprotein inhibits the pathophysiological action of Oxidized LDL. In this regard, HDL should be viewed as an oxidized LDL antagonist. HDL is also involved in the removal (reverse transport) of cholesterol from the artery walls to the blood stream, and then to the liver where cholesterol is converted to bile acids and then excreted in the bile. High HDL cholesterol levels (above 60 mg/dL) are anti-atherogenic and atheroprotective, and are associated with low risk of coronary artery disease. In contrast, low HDL cholesterol levels (less than 40 mg/dL) are associated with a high risk of coronary artery disease.

hs-CRP*
High-Sensitivity CRP is an independent, non-specific biomarker of inflammation and tissue injury. Chronically elevated levels of hs-CRP are associated with high cardiovascular disease (CVD) risk, whereas persistently low hs-CRP levels are associated with low CVD risk and even longevity. Very high (acute) hs-CRP levels (greater than 7.0 mg/L) are associated with infection and acute inflammation, arthritis, lupus, and other non-cardiovascular diseases.

Lowering CAD Risk in Patients
Patient compliance is improved when patients understand the test being performed. Lowering the Triple Marker Test result, and thus lowering CAD risk, is attainable through conventional treatments (dietary/lifestyle changes plus statins, if required). As shown in Fig. 1 the Oxidized LDL Triple Marker Test is significantly more effective than other currently available laboratory tests in identifying patients with CAD. Thus, the Oxidized LDL Triple Marker Test result should be especially useful in monitoring patients who modify their diet and lifestyle and/or receive therapeutic lipid-lowering medications.

**RELATIVE POTENCY* OF BIOMARKERS TO IDENTIFY PATIENTS WITH CORONARY ARTERY DISEASE (Fig. 1)**

<table>
<thead>
<tr>
<th>Biomarker</th>
<th>Relative Potency</th>
</tr>
</thead>
<tbody>
<tr>
<td>TC/HDL</td>
<td>7.5</td>
</tr>
<tr>
<td>Lp-PLA2</td>
<td>3.9</td>
</tr>
<tr>
<td>TRIG</td>
<td>2.4</td>
</tr>
<tr>
<td>hs-CRP</td>
<td>9.5</td>
</tr>
<tr>
<td>OxLDL</td>
<td>10.9</td>
</tr>
<tr>
<td>OxLDL/HDL</td>
<td>19.3</td>
</tr>
<tr>
<td>Triple-Marker</td>
<td>29</td>
</tr>
<tr>
<td>HDL</td>
<td>1</td>
</tr>
<tr>
<td>LDL-C</td>
<td>1.9</td>
</tr>
</tbody>
</table>
OXIDIZED LDL TRIPLE MARKER TEST VERSUS LDL IN IDENTIFYING PATIENTS WITH CORONARY ARTERY DISEASE

- Oxidized LDL is atherogenic and directly involved in the initiation and progression of the atherosclerotic disease process.
- Oxidized LDL is a predictive biomarker for the subclinical development of atherosclerosis and subsequent events.
- The Oxidized LDL Triple Marker Test is more accurate than other laboratory tests for measuring blood lipid levels as risk factors for developing atherosclerosis.
- The Oxidized LDL Triple Marker Test measurement is independent of patient fasting.

REFERENCES:


** United States Patent Pending (Detection of asymptomatic coronary artery disease using atherogenic proteins and acute phase reactants – United States Patent Application: 2005018145 Harold M. Bates, Ph.D., of Shiel Medical Laboratory, is the sole inventor of the Oxidized LDL Triple Marker Test)

Three test offerings for Oxidized LDL
1118 - Oxidized LDL
3778 - Oxidized LDL/HDL Ratio Test
9078 - Oxidized LDL Triple Marker Test

Specimen Requirements: Serum or EDTA Plasma

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