Pacific Biomarkers
The Value of Expertise

Paraoxonase-1 Activity (PON-1)

Analyte: Paraoxonase-1 Activity

Specimen Type: Serum, Inquire for additional option(s)

Optimum Volume: 0.5 mL

Stability:

2-8 Degrees C	-20 Degrees C	-70 Degrees C
5 days	2 months	1 year

Reporting Units: U*/L

Method: Colorimetric

Biological or Clinical Significance:

Paraoxonase is a single glycoprotein that is able to hydrolyze aromatic carboxylic acid esters as well as organophosphate compounds. It is closely associated with HDL particles and has a molecular mass of 43 kD.

The enzyme is found as two different alleles, one containing arginine at position 192 (PON1 B), while the other contains glutamine (PON1 A). The latter has decreased activity against paraoxon and other organophosphate compounds. Minimally oxidized-LDL contains multioxygenated phospholipids, including 1-palmitoyl 2-arachidonyl phophatidylcholine, which is a substrate for paraoxonase. Individuals with diabetes mellitus or familial hypercholesterolemia have reduced paraoxonase activity. This may facilitate the development of atherosclerosis because of the failure to inhibit the continued oxidative modification of LDL Studies have demonstrated paraoxonase's ability to protect against atherosclerosis by hydrolyzing specific derivatives of oxidized cholesterol and/or phospholipids in oxidized low-density lipoprotein and in atherosclerotic lesions.

Principle of Test Method:

Paraoxonase activity can be measured by a modification of the methods of Krisch and Eckerson as described by Haagen and Brock (see references). This assay, is adapted to an auto-analyzer which measures the initial velocity of the substrate formation to determine the activity of the enzyme. *U: mmol/minute (Amount of enzyme that would convert 1 mmol of substrate per minute under standard conditions),

References:

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3. Krisch K: Enzymatische Hydrolyse von Diathyl-p-nitrophenylphosphat (E600) durch menchliches Serum. Z Klin Chem u klin Biochem 1:41-45, 1968.

4. Eckerson, HW, Wyte, CM and La Du, BN: The human serum paraoxonase / arylesterase polymorphism. Am. J. Hum. Genet. 35, 1126-38, 1983.

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