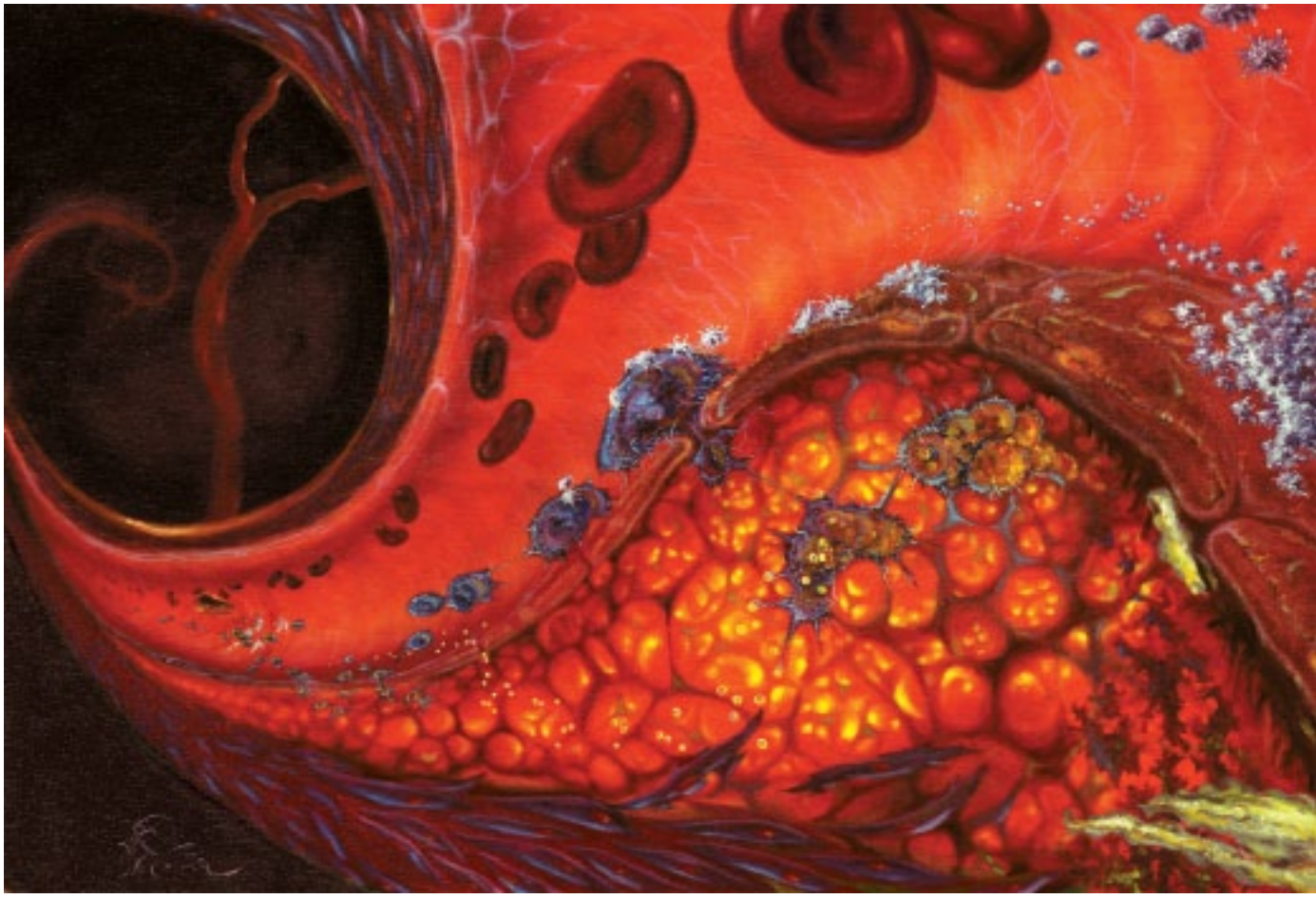
Kirk Maxey, M.D.

Introduction to

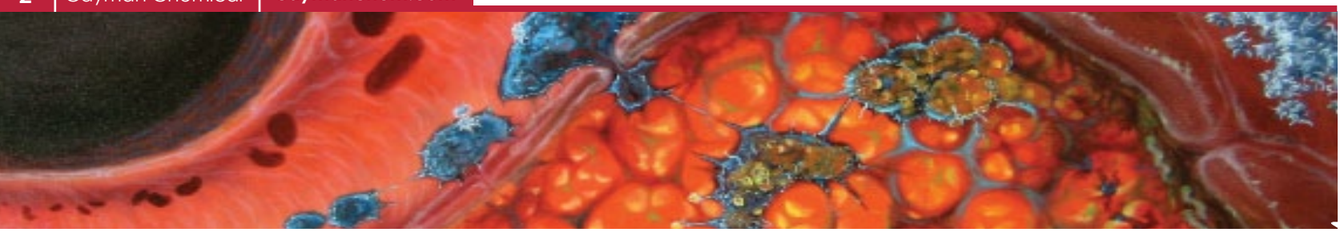
Atherosclerosis



Atherosclerosis Cover & Poster Paintings by Veronika Sherwood, Oil on Canvas

Atherosclerosis is responsible for one third of all deaths in North America and for 80% of all deaths among diabetic patients. The health risks of atherosclerosis will become even more dominant in the future as obesity and adult-onset diabetes become more prevalent. Atherosclerosis literally means the turning of the blood vessels to stone, easily seen in the calcified necrotic lesions of chronic disease. This attention to the physical manifestations of the disease continued into the recent past as physicians and the public alike became fixated by the gruel of cholesterol remaining after necrotic disintegration of terminal plaque macrophages called foam cells. More recently, scientists have recognized that foam cells and calcifications are both late manifestations of a chronic inflammatory disease. The molecular details of early atherosclerotic inflammation begin with the activation of vascular endothelial cells, the increased transport of lipoprotein particles into the subendothelial extracellular space, and the oxidative modification of those particles by cellular mechanisms. As basic scientists and clinicians unravel these molecular events, a more rational approach to disease prevention becomes possible. A balance must be reached between suppression of inflammation and increased infection risk. The efficacy and side effects of small molecule intervention can be better managed. Most important, millions of people will be spared the excruciating disabilities associated with atherosclerotic vascular disease.

The Atherosclerosis mini-catalog is the first in a series from Cayman. Our new format seeks to provide focused attention to specific diseases or pathways. In each mini-catalog, brief articles present current information on topics related to the focus. Additional information regarding products listed in these catalogs, as well as additional products from Cayman Chemical, may be found at **www.CaymanChem.com**.



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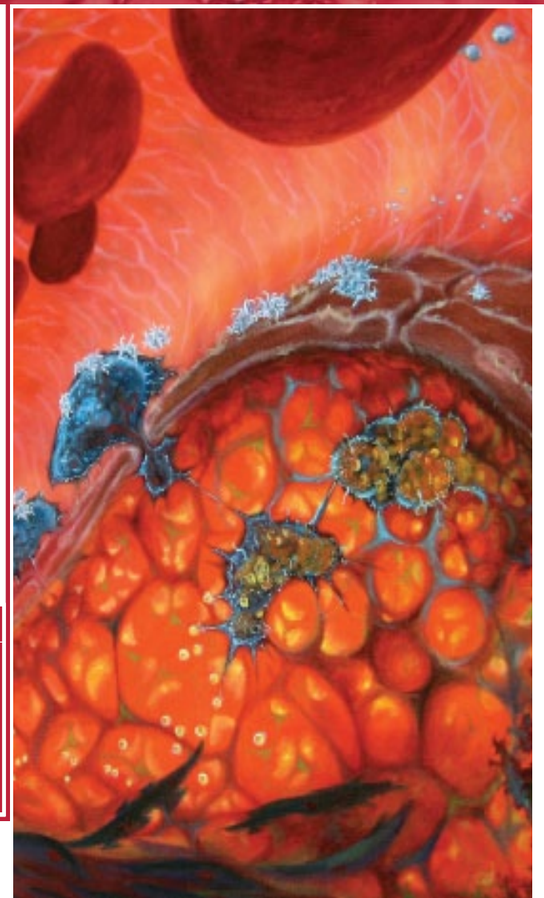
At

ATHEROSCLEROSIS



warranty and limitation of remedy

ordering information

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abbreviations

ACAT Acyl-Coenzyme A: cholesterol acyltransferase
ADP Adenosine diphosphate
ATP Adenosine triphosphate
COX Cyclooxygenase
CysLT Cysteinyl Leukotriene
EIA Enzyme Immunoassay
ELISA Enzyme-linked Immunosorbent Assay
FABP Fatty Acid Binding Protein
FW Formula Weight
GC Gas Chromatography
HDL High-Density Lipoprotein
ICC Immunocytochemistry
IDL Intermediate-Density Lipoprotein
IHC Immunohistochemistry
IL Interleukin
IP Immunoprecipitation
IP Receptor Prostaglandin I_2 Receptor
LC Liquid Chromatography
LDL Low-Density Lipoprotein
LDLR Low-Density Lipoprotein Receptor
LO Lipoxygenase
LT Leukotriene
LXR Liver X Receptor
MF Molecular Formula
MS Mass Spectrometry
NOS Nitric Oxide Synthase
eNOS Endothelial Nitric Oxide Synthase
iNOS Inducible Nitric Oxide Synthase
nNOS Neuronal Nitric Oxide Synthase
oxLDL Oxidized Low-Density Lipoprotein
PAF Platelet-activating Factor
PG Prostaglandin
PLD Phospholipase D
PMNL Polymorphonuclear Leukocytes
PPAR Peroxisome Proliferator-activated Receptor
SREBP-2 Sterol Regulatory Element-binding Protein-2
TG Triglyceride
TP Receptor Thromboxane A_2 Receptor
TX Thromboxane
VLDL Very Low-Density Lipoprotein
WB Western Blot

Olivia May, Ph.D.

Mediating Cholesterol Homeostasis through

SREBP-2 / LDLR / PCSK9 Signalling

Lipid homeostasis in vertebrate cells is regulated by sterol regulatory element-binding proteins (SREBPs), unique members of the basic helix-loop-helix leucine zipper family of transcription factors. SREBPs directly activate the expression of over 30 genes involved in both the synthesis and uptake of cholesterol, fatty acids, triglycerides, and phospholipids.[1,2] They are also involved in activating three genes required to generate NADPH, which is consumed at multiple stages in lipid biosynthesis.

Structural features of SREBP

Three major SREBP isoforms, SREBP-1a, -1c, and -2, have been identified and differ in relative abundance in the liver and other various tissues. SREBP-1c predominates in the liver as it is 10-fold more abundant than SREBP-1a and 2-fold more abundant than SREBP-2. SREBP-1a and -1c are both encoded from a gene on human chromosome 17p11.2, while SREBP-2 is derived from a gene on chromosome 22q13. SREBP proteins are organized into 3 domains—an NH_2-terminal domain that contains the bHLH-Zip region for binding DNA, two hydrophobic transmembrane-spanning segments interrupted by a short loop of about 30 amino acids that project into the lumen of the ER, and a COOH-terminal regulatory domain. SREBP-1a and -2 have relatively long transcriptional activation domains, while the NH_2-terminal acidic domain of SREBP-1c is 18 amino acids shorter. Constitutively expressed at low levels, SREBP-1a is a potent activator of all SREBP-responsive genes and most likely functions to maintain basal levels of cholesterol and fatty acid synthesis. In contrast, SREBP-1c selectively activates genes involved in fatty acid synthesis, while SREBP-2 preferentially regulates genes important for cholesterol homeostasis by activating the transcription of HMG-CoA synthase, HMG-CoA reductase, LDL receptor (LDLR), and proprotein convertase subtilisin kexin type 9 (PCSK9).

Pathway of SREBP-2 activation and signalling

SREBP-2 activity is tightly regulated by cellular sterol levels. When intracellular levels of cholesterol are high, SREBP-2 is present in the ER as an inactive precursor bound to SREBP cleavage-activating protein (SCAP). Sterols mediate feedback inhibition of SREBP-2 *via* Insig-1 and -2, which bind to SCAP in the ER and prevent movement of the SCAP/SREBP complex to the Golgi. As cholesterol levels decrease, SREBP-2 moves to the Golgi where it is proteolytically cleaved by the protein convertase Subtilisin kexin isozyme/Site-1 protease (SKI-1/S1P) and the intramembranous metalloprotease Site-2 protease (S2P), which act sequentially to release the NH_2-terminal bHLH-Zip domain of SREBP-2 from the membrane. Two N-terminal fragments dimerize, bind importin β, and enter the nucleus to bind to a sterol response element (SRE) in the promoter region of target genes and up-regulate transcription.

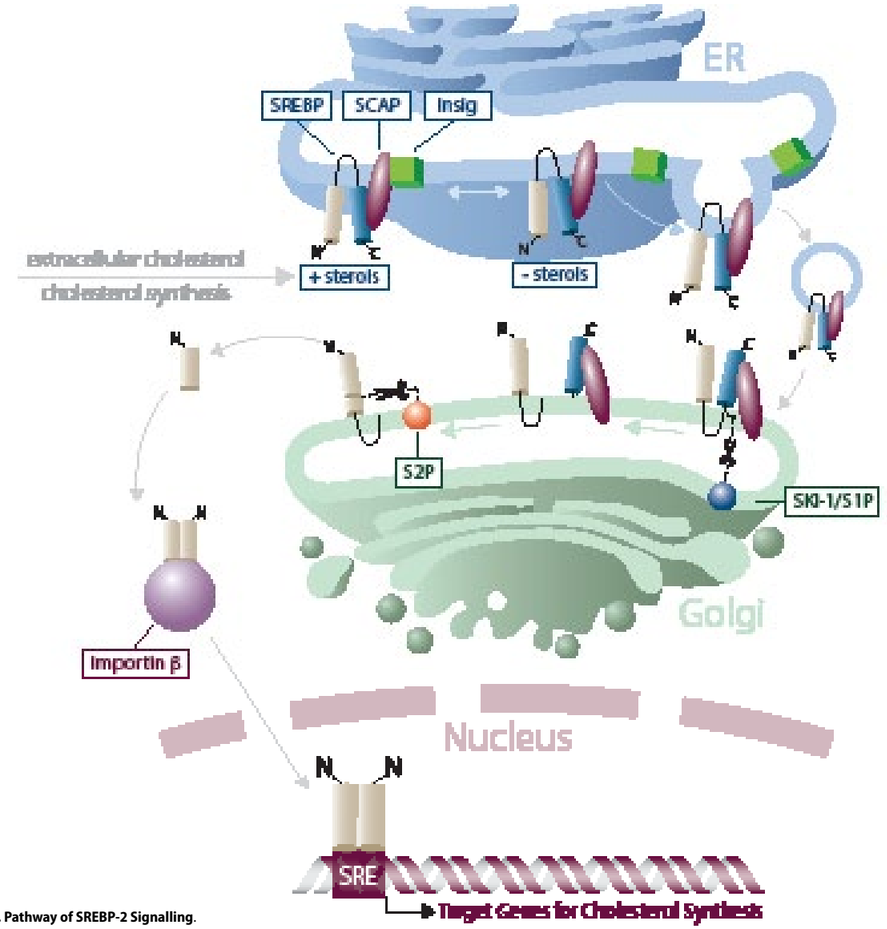

Figure 1. Pathway of SREBP-2 Signalling.

SREBP-2: A paradoxical regulator of plasma LDL

In addition to up-regulation of LDLR transcription, which ultimately increases clearance of LDL from the bloodstream, nuclear SREBP-2 increases the transcription of PCSK9, a sterol-responsive protein that accelerates LDLR turnover in the liver, thereby limiting uptake the lipoprotein. Thus, two opposing effects on plasma cholesterol levels are initiated by the same metabolic signal. As high concentrations of cellular cholesterol suppress SREBP-2 cleavage and release from the ER, PCSK9 transcription is reduced, which subsequently increases LDLR levels helping to maintain cholesterol homeostasis.

Mutations in genes encoding PCSK9

PCSK9 was originally identified as neural apoptosis regulated convertase 1 (NARC-1) because it was upregulated during neuronal apoptosis.[3] However, naturally occurring mutations resulting in hypercholesterolemia led to the discovery that circulating levels of PCSK9 were linked with cholesterol metabolism. Three missense, gain-of-function mutations, S127R, F216L, and D374Y, were initially identified in patients in association with increased plasma LDL-cholesterol levels. N425S and R496W were mutations identified later in hypercholesterolemic individuals who also had mutations in the LDLR. When PCSK9 is overexpressed in mice, there is a dramatic decrease in levels of LDLR protein but not mRNA LDLR in the liver. Thus, overexpression of PCSK9 reduces LDLR post-transcriptionally.

Hypocholesterolemia results from many different loss-of-function mutations in PCSK9. The identification of the Y142X, C679X, and R46L mutants broached the potential relationship between plasma levels of LDL and coronary heart disease. A fifteen-year study of patients with nonsense mutations in PCSK9 revealed that naturally-reduced LDL levels (by as much as 28%) decreased the frequency of heart disease by 88%.[4] Additional in-frame deletions and missense mutations (DR97, G106R, L253F, A443T) have also been identified. In PCSK9 knockout mice, levels of LDLR are elevated and clearance of plasma LDL is accelerated suggesting that PCSK9 normally functions to limit the uptake of LDL by suppressing LDLR levels. In conjunction with reduction of LDLR, PCSK9 can increase the rate of secretion of ApoB-100, the main apolipoprotein of LDL, from the liver, further influencing plasma LDL levels.[5] Evidence of this can be found in the S127R gain-of-function mutation, which results in a three-fold increase in ApoB compared to controls.

Structural features and site of action of PCSK9

PCSK9 consists of a signal sequence (amino acids 1-30) followed by the prodomain (amino acids 31-152) and catalytic domain (amino acids 153-425). Rather than having a classical P domain required in other proprotein convertases for folding and regulation of protease activity, the tail of the catalytic domain contains a 279-amino acid C-terminal region rich in cysteines and histidines. Synthesized in the ER as a ~72 kDa precursor, the protein undergoes autocatalytic cleavage between the prodomain and catalytic domain. The prodomain (~14 kDa), however, remains associated with the mature protein (63 kDa) as it follows the secretary pathway to the Golgi where both segments undergo tyrosine sulfation before being secreted.

While the exact LDLR binding domain and its inhibitory prosegment are unknown, PCSK9 does not appear to directly cleave LDLR. It is likely that PCSK9 interacts with LDLR protein on the cell surface and functions as a chaperone to interfere with normal LDLR recycling and direct it toward the intracellular degradative pathway.[6,7] ARH (autosomal recessive hypercholesterolemia), an endocytic adaptor protein necessary for LDLR internalization, must also be present for PCSK9-mediated degradation of LDLR.[8]

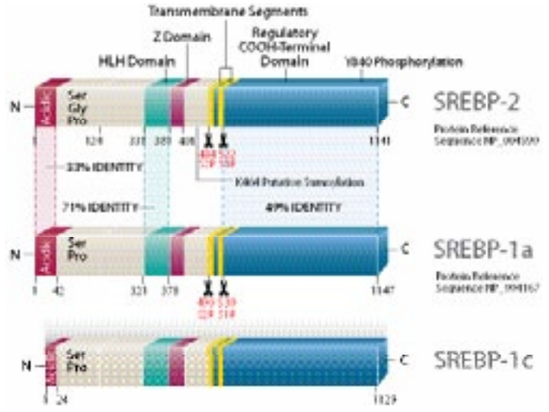

Figure 2. SREBP Isoforms.

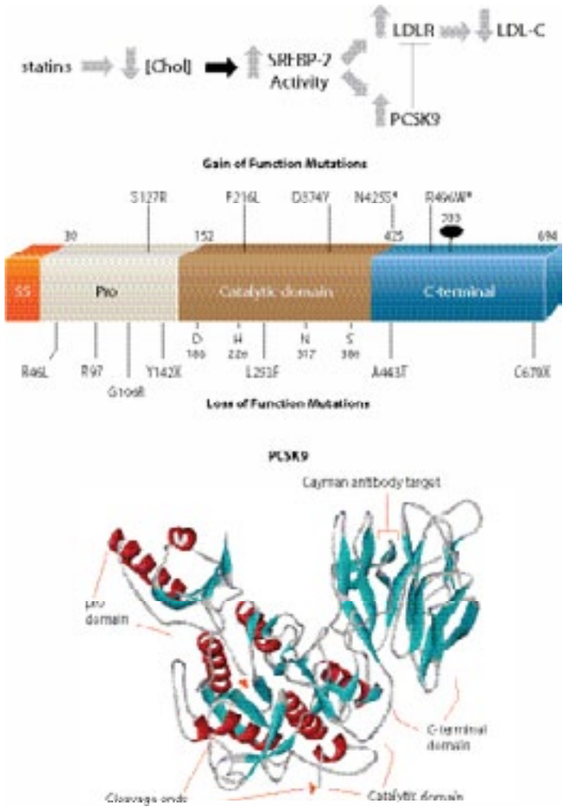

Figure 3. Regulation and structure of PCSK9. Reduction in cholesterol levels increases SREBP-2 activity, leading to increases in both LDLR and PCSK9 transcription. Paradoxically, PCSK9 removes LDLR, reducing LDL-cholesterol removal. Mutations in PCSK9 have been identified that increase ("gain of function") or decrease ("loss of function") LDLR removal.[10] PCSK9 does not remove LDLR through its protease activity. To date, the only known substrate of PCSK9 is itself, with cleavage occurring between residues 152, 153.

PCSK9 potential as a therapeutic target

The paradoxical regulation of LDL helps to explain why statins are only marginally effective at regulating LDL plasma levels. That is, a five year treatment with cholesterol-lowering statins reduces the incidence of heart attack by only 40% even when LDL cholesterol is decreased by 80 mg/dl.[8] Statins inhibit cholesterol synthesis through inhibition of HMG-CoA reductase, which results in an upregulation of both LDLR and PCSK9 mRNA levels *via* sterol-mediated SREBP-2 activation.[9] Therefore, upregulation of PCSK9 partially negates the LDL-lowering effects of statins. Ideally, a pharmacological inhibitor of PCSK9 could intervene in this atherogenic effect by increasing LDLR levels without affecting other genes regulated by SREBP-2.

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ACAT-1 Polyclonal Antibody 100028

Sterol O-Acyltransferase 1
Peptide affinity-purified IgG **Stability:** ≥1 year at -20°C
Summary: Antigen: human ACAT-1 amino acids 6-23 • Host: rabbit • Cross-reactivity: (+) murine, rat, porcine, and human ACAT-1; other species not tested • Applications: WB, IHC, and ICC; other applications not tested • ACAT-1 catalyzes the formation of cholesterol esters from cholesterol and long chain fatty acyl-coenzyme A, and may play a role in the development of atherosclerosis.

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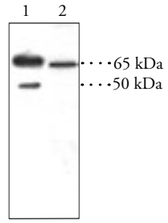

Lane 1: *Rat liver (30 µg)*
Lane 2: *HepG2 cell lysate (30 µg)*

Also Available: *ACAT-1 Blocking Peptide (10005090)* *200 µg*

ACAT-2 Polyclonal Antibody 100027

Sterol O-Acyltransferase 2
Peptide affinity-purified IgG **Stability:** ≥1 year at -20°C
Summary: Antigen: human ACAT-2 amino acids 3-20 • Host: rabbit • Cross-reactivity: (+) human, murine, rat, porcine, and ovine ACAT-2; other species not tested • Applications: WB, ICC, and IHC • ACAT-2 catalyzes the formation of cholesterol esters from cholesterol and long chain fatty acyl-coenzyme A.

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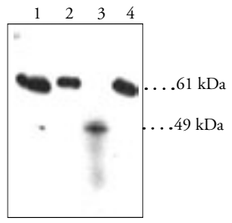


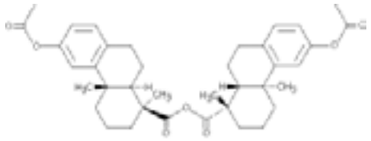
Lane 1: *Murine liver (30 µg)*
Lane 2: *JGC-1 cell lysate (30 µg)*
Lane 3: *Jurkat (human) cell lysate (30 µg)*
Lane 4: *Rat liver (60 µg)*

Also Available: *ACAT-2 Blocking Peptide (10005091)* *200 µg*

NEW Acetyl Podocarpic Acid Anhydride 10007686

[344327-48-6] APD
MF: $C_{36}H_{46}O_7$ **FW:** 614.8 **Purity:** ≥98%
A crystalline solid **Stability:** ≥2 years at -20°C
Summary: APD is a potent, semi-synthetic LXR agonist that acts through LXR in concert with RXR, its heterodimerization partner, to induce the expression of the ABCA1 reverse cholesterol transporter. This acts to increase the efflux of cholesterol from enterocytes and thus inhibit the overall absorption of cholesterol (ED_{50} value of 1 nM). APD is approximately 1,000 times more potent and has 8-10 fold greater maximal stimulation of LXR than 22(R)-hydroxy cholesterol. APD can be used as a positive control for the testing of LXR agonists, which have potential as therapeutic agents for the treatment of atherosclerosis.

1 mg
5 mg
10 mg
50 mg



6-(acetyloxy)-1,2,3,4,4a,9,10,10a-octahydro-1,4a-dimethyl-1-phenanthrenecarboxylic acid, anhydride

AcSDKP EIA Kit* 589451

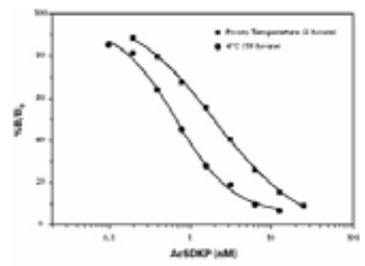
N-Acetyl Ser-Asp-Lys-Pro
Stability: ≥6 months at -20°C
Summary: AcSDKP is a tetrapeptide growth regulatory hormone which inhibits the proliferation of hematopoietic stem cells. The dipeptidase Angiotensin Converting Enzyme (ACE) actively metabolizes circulating AcSDKP, giving it a brief plasma half-life of 4 to 5 minutes. ACE inhibition is a major therapeutic end point in the treatment of hypertension management. A further consequence of ACE inhibition is the accumulation of AcSDKP in plasma and urine. This accumulation may have physiological effects, which are manifested as the anemia of chronic ACE inhibitor toxicity. More commonly, plasma and urine AcSDKP levels can be used as a biomarker of ACE inhibition and an index of patient compliance with therapy. Measurement of AcSDKP in human urine or plasma can be readily accomplished by EIA.

Sensitivity: 50% B/B_0: 2.0 nM after 3 hour immunological reaction
0.5 nM after 18 hour immunological reaction
80% B/B_0: 0.2 nM after 18 hour immunological reaction

Specificity:

AcSDOrnP	500%
AcSDKP	100%
AcSDRP	6%
SDKP	0.5%
Thymosin B_4	<0.25%
AcSDK	0.03%
AcSDKPDC	<0.01%
AcSDKPY	<0.01%
rTNF	<0.01%

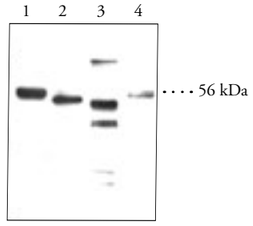
96 wells



NEW Adipose Triglyceride Lipase Polyclonal Antibody 10006409

ATGL, Desnutrin, $PLA_2\zeta$
Peptide affinity-purified IgG **Stability:** ≥1 year at 4°C
Summary: Antigen: human ATGL amino acids 382-400 • Host: rabbit • Cross-reactivity: (+) human, murine, and rat ATGL • Applications: WB and IHC (paraffin-embedded sections)

1 ea



Lane 1: *Human liver microsome (50 µg)*
Lane 2: *HepG2 cell lysate (50 µg)*
Lane 3: *Rat brown fat homogenate (50 µg)*
Lane 4: *Murine liver 100,000 x g pellet (50 µg)*

Also Available: *Adipose Triglyceride Lipase Blocking Peptide (10008492)* *200 µg*

Angiotensin II EIA Kit* 589301

Stability: ≥6 months at -20°C
Summary: Angiotensin II is a primary reactive vasoconstrictor, the main stimulus for aldosterone release, and one of the causative factors of chronic hypertension. The active angiotensin II octapeptide is released *via* a tightly controlled series of prohormones and proteases. Normal human plasma angiotensin II levels are 10-30 pg/ml when measured at rest in the supine position; they increase on standing, exercise, dehydration, or sodium depletion. The unique, patented 'Immobilized Antigen' technology of this angiotensin II immunometric assay allows reliable detection of 1-2 pg/ml, or as little as 10% of the normal human plasma concentration.

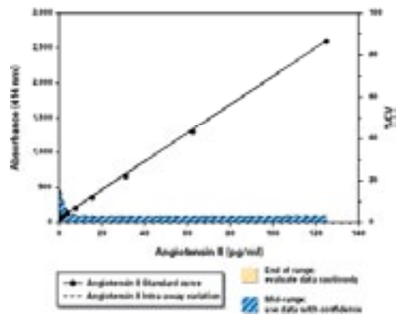
Sensitivity: Limit of detection: 1.5 pg/ml
Specificity:

Angiotensin II	100%
Angiotensin III	36%
Angiotensin 3-8	33%
Angiotensin I	4%
Angiotensin 1-7	<0.01%

Homology:

Mammalian Angiotensin II	100%

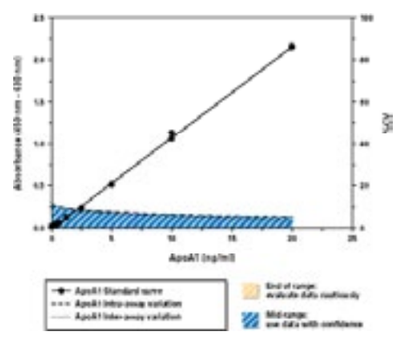
96 wells



NEW ApoA1 EIA Kit 10010551

Apolipoprotein A1
Stability: ≥6 months at -20°C
Summary: ApoA1 is a major protein component of HDL. Clinical studies have demonstrated that lower levels of ApoA1 are associated with an increased risk of myocardial infarction and coronary artery disease. Overexpression of ApoA1 raises HDL cholesterol levels and inhibits the progression of atherosclerosis in mice. For this reason, upregulation of ApoA1 expression is considered to be one of the most promising approaches to the development of new therapies for atherosclerosis targeting HDL. Cayman Chemical's ApoA1 EIA Kit is an immunometric assay which can be used to measure ApoA1 in plasma and serum without prior sample purification. The standard curve spans the range of 0-20,000 pg/ml with a limit of detection of approximately 300 pg/ml.

96 wells
480 wells



NEW ApoA1 Polyclonal Antibody 10008463

Apolipoprotein A1
Peptide affinity-purified IgG **Stability:** ≥1 year at -20°C
Summary: Antigen: human ApoA1 protein amino acids 188-199 • Host: rabbit • Cross-reactivity: (+) human, murine, and rat ApoA1 protein • Applications: WB and ICC

1 ea

NEW ApoA1 Western Ready Control 10009751

Apolipoprotein A1
Purity: 28 kDa
Stability: ≥6 months at -20°C
Summary: Source: human recombinant protein • Application: positive control for WB • ApoA1 is a major protein component of HDL. It acts as an acceptor for sequential transfers of phospholipids and free cholesterol from peripheral tissues and transports cholesterol to the liver and other tissues for excretion and steroidogenesis.

1 ea

NEW ApoB-100 EIA Kit 10011012

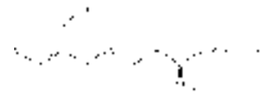
Apolipoprotein B-100
Stability: ≥6 months at -20°C
Summary: ApoB-100 is the major protein component of the atherogenic lipoprotein particles VLDL, IDL, and LDL, with each particle possessing one molecule of ApoB-100. ApoB-100 is essential for the binding of LDL particles to the LDLR as the initial step in the cellular uptake and degradation of LDL. Two mutations of ApoB-100 that decrease its ability to bind to the LDLR, and therefore the uptake of LDL into cells, have been linked with familial hypercholesterolemia. Several clinical studies have demonstrated that elevated levels of plasma ApoB-100 are associated with an increased risk of myocardial infarction and coronary artery disease. Some studies suggest that ApoB-100 or the ratio of ApoB-100/ApoA1 is more predictive of the risk of myocardial infarction than is LDL. Cayman's ApoB-100 EIA Kit is an immunometric assay for the measurement of human ApoB-100 in plasma samples.

96 wells
480 wells

N^G,N^G-dimethyl-L-Arginine (dihydrochloride) 80230

[220805-22-1] ADMA (dihydrochloride)
MF: $C_8H_{18}N_4O_2$ • 2HCl **FW:** 275.2 **Purity:** ≥98%
A crystalline solid **Stability:** ≥1 year at -20°C
Summary: ADMA is an endogenous NOS inhibitor. ADMA concentrations increase in several disease states including renal failure, muscular dystrophy, hypercholesterolemia, and pregnancy with preeclampsia, but its precise role in these diseases has not been elucidated.

5 mg
10 mg
50 mg
100 mg

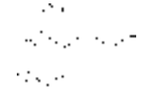


N^5-[(dimethylamino)iminomethyl]-L-ornithine, dihydrochloride

Aspirin 70260

[50-78-2] Acetylsalicylic Acid
MF: $C_9H_8O_4$ **FW:** 180.2 **Purity:** ≥99%
A crystalline solid **Stability:** ≥2 years at room temperature
Summary: Aspirin is a non-selective, irreversible COX inhibitor. The IC_{50} values for inhibition of ovine COX-1 and -2 are 0.75 and 1.25 mM, respectively. Aspirin acetylates COX-1 at Ser^{530} and COX-2 at Ser^{516} resulting in irreversible enzyme inhibition.

5 g
25 g
50 g
100 g



2-(acetyloxy)-benzoic acid

**SPI-BIO Assays are available through Cayman Chemical only within North & South America and Asia; elsewhere contact SPI-BIO.*

Athero-PAK 10005292

Stability: ≥6 months at -20°C
Summary: The Athero-PAK contains our human ACAT-1 polyclonal antibody and blocking peptide. Targeting human amino acids 6-23 of the ACAT-1, these reagents can be used for WB analysis and IHC. Also included are several oxidized bioactive lipid species, including cholesteryl linoleate hydroperoxides, POV-PC, and PGPC.

1 ea

Atriopeptin (rat) EIA Kit* 589401

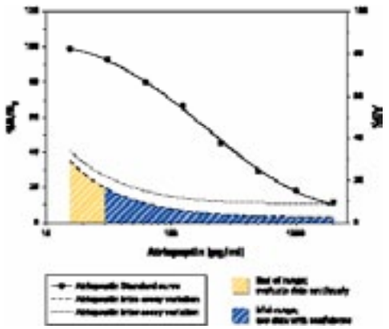
Stability: ≥6 months at -20°C
Summary: Atriopeptin is a 28 amino acid peptide synthesized primarily in cardiac atria. This peptide hormone acts in opposition to angiotensin II in regulating renal, hemodynamic, and endocrine function. Atriopeptin is released in response to the increased pressure and mechanical stretch of the right atrium due to blood volume overload. Atriopeptin then acts at the nephron to increase salt and water excretion, lowering blood volume and blood pressure. Elevated plasma atriopeptin levels may be produced in experimental models by volume expansion, high salt diets, and in response to vasoconstrictors. Increased plasma concentrations have also been reported in various pathological conditions such as renal disease, congestive heart failure, and paroxysmal atrial tachycardia.

Sensitivity: 50% B/B_0: 190 pg/ml
80% B/B_0: 60 pg/ml

Specificity:

Rat Atriopeptin 24	100%
Atrial Natriuretic Peptide (8-33)	100%
Rat Atrial Natriuretic Peptide	100%
Human Atrial Natriuretic Peptide	100%
Atrial Natriuretic Peptide (18-28)	60%
Human β Atrial Natriuretic Peptide	50%
Human 6 Atrial Natriuretic Peptide	40%
Auriculin A	10%
Rat Atriopeptin II	5%
Rat Atrial Natriuretic Peptide (13-28)	1%
Arg^8-Vasopressin	<0.01%
Brain Natriuretic Peptide	<0.01%
Oxytocin	<0.01%
Rat Atriopeptin I	<0.01%
Somastostatin	<0.01%

96 wells



*SPI-BIO Assays are available through Cayman Chemical only within North & South America and Asia; elsewhere contact SPI-BIO.

Azelaoyl PAF 60924

MF: $C_{33}H_{66}NO_9P$ **FW:** 651.9 **Purity:** ≥98%
A solution in ethanol **Stability:** ≥1 year at -20°C
Summary: oxLDL particles contain low molecular weight species which promote the differentiation of monocytes *via* the nuclear receptor PPARg. One of these substances was recently isolated and purified from oxLDL, and identified as azelaoyl PAF. Azelaoyl PAF is a potent PPARg agonist which competes for the thiazolidinedione binding site. Azelaoyl PAF is more potent than 15-deoxy-$D^{12,14}$-PGJ_2, and equipotent with rosiglitazone as a ligand for this receptor.

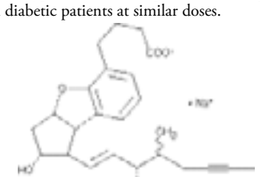
1 mg
5 mg
10 mg
50 mg

1-O-hexadecyl-2-O-(9-carboxyoctanoyl)-sn-glyceryl-3-phosphocholine

Beraprost (sodium salt) 18230

[88475-69-8] ML 1129, Procylin, TRK 100
MF: $C_{24}H_{29}O_5$ • Na **FW:** 420.5 **Purity:** ≥98%
A crystalline solid **Stability:** ≥2 years at -20°C
Summary: Beraprost is an analog of prostacyclin in which the unstable enol-ether has been replaced by a benzofuran ether function. This modification increases the plasma half-life from 30 seconds to several hours, and permits the compound to be taken orally. Doses of 20-100 µg in humans, given 1 to 3 times per day, have been demonstrated to improve clinical end points in diseases responsive to prostacyclin. Oral beraprost therapy improved the survival and pulmonary hemodynamics of patients with primary pulmonary hypertension. Beraprost inhibits platelet aggregation in healthy subjects and in diabetic patients at similar doses.

1 mg
5 mg
10 mg
50 mg



2,3,3a,8b-tetrahydro-2-hydroxy-1-(3-hydroxy-4-methyl-1-octen-6-ynyl)-1H-cyclopenta[b]benzofuran-5-butanoic acid, sodium salt

Berberine 10006427

[633-65-8] BBR, Umbellatine
MF: $C_{20}H_{18}ClNO_4$ **FW:** 371.8 **Purity:** ≥95%
A crystalline solid **Stability:** ≥2 years at -20°C
Summary: Berberine is a widely distributed berberidaceaen alkaloid that has been employed in traditional medicine as an antiprotozoal and antidiarrheal agent. Berberine reduces total cholesterol, LDL cholesterol, and TGs in both humans (at 1 g/day) and hamsters fed 50 mg/kg/day along with a high fat diet. Berberine does not act through HMG-CoA reductase inhibition, but instead enhances LDL-receptor protein and mRNA levels in hepatocytes. Berberine is therefore a natural product that may help control serum cholesterol without the side effects typical of the statin family of hypocholesterolemic drugs.

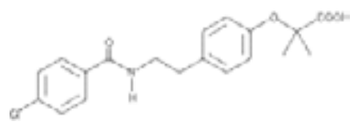
1 g
5 g
10 g
25 g

5,6-dihydro-9,10-dimethoxy-benzo[g]-1,3-benzodioxolo[5,6-a]quinolizinium, chloride

NEW Bezafibrate 10009145

[41859-67-0] Benzofibrate, Bezalip, Bezatrol, BM 15075, Difaterol
MF: $C_{19}H_{20}N_4ClNO_4$ **FW:** 361.8 **Purity:** ≥98%
A crystalline solid **Stability:** ≥2 years at -20°C
Summary: Bezafibrate is a well established pan-PPAR activator. It activates human PPARa, PPARd, and PPARg with EC_{50} values of 50, 20, and 60 µM, respectively, in a cell-based transcription assay. Bezafibrate helps lower LDL cholesterol and triglycerides while raising HDL cholesterol levels. It also improves insulin sensitivity and reduces blood glucose levels, which in combination with the cholesterol effects significantly lowers the incidence of cardiovascular events and development of diabetes in patients with features of metabolic syndrome.

500 mg
1 g
5 g
10 g

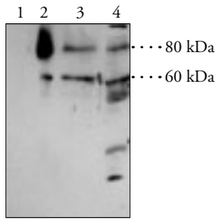


2-[4-[2-[(4-chlorobenzoyl)amino]ethyl]phenoxy]-2-methyl-propanoic acid

BLT_1 Receptor Polyclonal Antibody 120114

$BLTR_1$, Leukotriene B_4 Receptor 1, LTB_4 Receptor 1
Peptide affinity-purified IgG **Stability:** ≥1 year at 4°C
Summary: Antigen: human BLT_1 receptor amino acids 331-352 • Host: rabbit • Cross-reactivity: (+) human and bovine BLT_1 receptor; (-) murine BLT_1 receptor • Applications: WB, flow cytometry, ICC, and IHC

1 ea



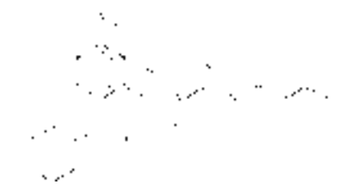
Lane 1: *CHO lysate (30 µg)*
Lane 2: *LTB_4 receptor transfected CHO cell lysate (30 µg)*
Lane 3: *U937 cell lysate (50 µg)*
Lane 4: *Bovine lung membrane (100 µg)*

Also Available: *BLT_1 Receptor Blocking Peptide (120112) 1 mg*

BM 567 10155

[284464-77-3] Sold and made under non-exclusive license from Université of Liège.
MF: $C_{18}H_{28}N_4O_5S$ **FW:** 412.5 **Purity:** ≥98%
A crystalline solid **Stability:** ≥2 years at -20°C
Summary: BM 567 is a dual acting antithrombogenic agent, acting as an inhibitor of TXA_2 synthase and as an antagonist of the TP receptor, the G protein-coupled receptor mediating TXA_2 activity in platelets and vascular smooth muscle. BM 567 antagonizes the vascular smooth muscle TP receptor with an IC_{50} value of 1.1 nM. It inhibits platelet TXA_2 synthase with an IC_{50} value of 12 nM.

1 mg
5 mg
10 mg
50 mg

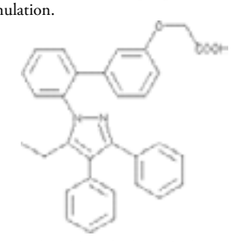


2-(cyclohexylamino)-5-nitro-N-[(pentylamino)carbonyl]-benzenesulfonamide

BMS 309403 10010206

[300657-03-8]
MF: $C_{31}H_{26}N_2O_3$ **FW:** 474.6 **Purity:** ≥98%
A crystalline solid **Stability:** ≥1 year at -20°C
Summary: A potent and selective FABP4 inhibitor (K_i < 2 nM) that has anti-atherogenic effects including decreasing production of chemoattractant and inflammatory cytokines, reducing transformation of macrophages into foam cells, and diminishing cholesterol ester accumulation.

1 mg
5 mg
10 mg
50 mg



[[2'-(5-ethyl-3,4-diphenyl-1H-pyrazol-1-yl)[1,1-biphenyl][3-yl]oxy]-acetic acid

Butanoyl PAF 60928

MF: $C_{28}H_{58}NO_7P$ **FW:** 551.7 **Purity:** ≥98%
A solution in ethanol **Stability:** ≥1 year at -20°C
Summary: oxLDL particles contain low molecular weight species which promote the differentiation of monocytes and activate PMNL. One of these substances was recently isolated and purified from oxLDL and identified as azelaoyl PC. Butanoyl PAF is a closely related compound which retains at least 10% of the agonist potency of PAF itself. Further, butanoyl PAF is present in oxLDL in amounts more than 100 times greater than enzymatically generated PAF. Butanoyl PAF is therefore one of the important signalling molecules present in oxLDL.

1 mg
5 mg
10 mg
50 mg

1-O-hexadecyl-2-O-butanoyl-sn-glyceryl-3-phosphocholine

Butenoyl PAF 60929

MF: $C_{28}H_{56}NO_7P$ **FW:** 549.7 **Purity:** ≥98%
A solution in ethanol **Stability:** ≥1 year at -20°C
Summary: Butenoyl is a product of the oxidative decomposition of 2-arachidonoyl-containing phospholipids. Oxygenation of C-5 of the 5,6 double bond followed by cleavage of the hydroperoxide results in a PAF-like compound with a 4-carbon residue esterified in the *sn*-2 position; similar oxidized lipid products also act as ligands for oxidized lipid receptors and PPAR. Although butenoyl PAF is 10-fold less potent than PAF as a PAF receptor agonist, it is present in amounts 100-fold greater than enzymatically generated PAF.

1 mg
5 mg
10 mg
50 mg

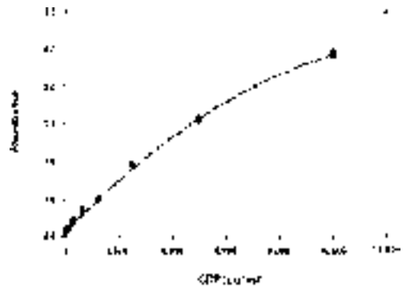
1-O-hexadecyl-2-O-butanoyl-sn-glyceryl-3-phosphocholine

NEW C-reactive Protein EIA Kit 10011236

CRP

CRP is a 224 amino acid protein that is primarily synthesized by hepatocytes, and to some extent adipocytes, and increases ~1,000-fold in response to acute and chronic inflammatory conditions. Because of this rapid and dramatic rise, the plasma concentration of CRP is routinely measured as a gauge of inflammation in a wide range of health and disease conditions. Normal levels of serum CRP (0.64 mg/L) are not different between healthy adult men and women, but tend to increase slightly with age. High plasma CRP concentrations (>3 mg/L) are associated with an increased risk for atherosclerotic vascular disease. While the exact function is unclear, CRP has been implicated as a contributor to atherogenesis by numerous means including modulating endothelial function, stimulating coagulation, marking vascular inflammation by inducing an increase in expression of ICAM-1, VCAM-1, and E-selectin, mediating uptake of LDL into macrophages, and destabilizing plaques.

96 wells
480 wells



Carbaprostacyclin 18210

[69552-46-1] Carbacyclin, cPGI

MF: $C_{21}H_{34}O_4$ **FW:** 350.5 **Purity:** ≥99%

A crystalline solid **Stability:** ≥1 year at -20°C

Summary: Carbaprostacyclin is a stable analog of PGI_2. When infused in rabbits or dogs, it inhibits *ex vivo* platelet aggregation, but the effect persists only 10 minutes after termination of the infusion. This implies rapid metabolic inactivation of carbaprostacyclin. Carbaprostacyclin inhibits platelet aggregation with an ED_{50} value of 47 nM, which is 10% of the molar potency exhibited by PGI_2.

1 mg
5 mg
10 mg
50 mg

6,9α-methylene-11α,15S-dihydroxy-prosta-5E,13E-dien-1-oic acid

Carbocyclic Thromboxane A_2 19010

[74034-56-3] CTA_2

MF: $C_{22}H_{36}O_3$ **FW:** 348.5 **Purity:** ≥98%*

A solution in ethanol **Stability:** ≥1 year at -20°C

Summary: CTA_2 is a stable analog of TXA_2. CTA_2 is a potent coronary vasoconstrictor that is effective at concentrations as low as 1 nM in cat coronary arteries. Unlike other vascular TP receptor agonists, CTA_2 is a potent inhibitor of prostanoid-induced platelet aggregation. It inhibits arachidonic acid-induced aggregation with an IC_{50} value of 4-5 µM. CTA_2 also exhibits selective and dose-dependent inhibition of TXB_2 synthesis in rabbit platelets at concentrations between 1 and 100 µM.

100 µg
500 µg
1 mg
5 mg

9α,11α-methylene-15S-hydroxy-11a-deoxy-11a-methylene-thromba-5Z,13E-dien-1-oic acid

CAY10441 10005186

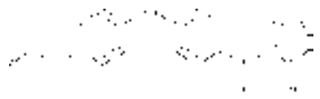
[221529-58-4]

MF: $C_{19}H_{23}N_3O$ **FW:** 309.4 **Purity:** ≥98%

A crystalline solid **Stability:** ≥2 years at -20°C

Summary: CAY10441 is a high-affinity antagonist for the human IP receptor. It inhibits the binding of tritiated iloprost to rodent neuroblastoma cells with a K_i value of about 1.5 nM. At levels between 2-20 mg/kg in rats, CAY10441 shows significant analgesic activity in standard antinociceptive assays.

1 mg
5 mg
10 mg
50 mg



4,5-dihydro-N-[4-[[4-(1-methylethoxy)phenyl]methyl]phenyl]-1H-imadazol-2-amine

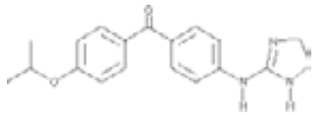
CAY10449 10005913

MF: $C_{19}H_{21}N_3O_2$ **FW:** 323.4 **Purity:** ≥98%

A crystalline solid **Stability:** ≥2 years at -20°C

Summary: CAY10449 is a high-affinity antagonist for the human IP receptor. It inhibits the binding of tritiated iloprost to rodent neuroblastoma cells with a K_i value of about 3 nM.

1 mg
5 mg
10 mg
50 mg



4,5-dihydro-N-[4-[[4-(1-methylethoxy)phenyl]carbonyl]phenyl]-1H-imadazol-2-amine

CAY10485 10006482

[615264-62-5] 3,4-dihydroxy Hydrocinnamic acid (L-Aspartic acid dibenzyl ester) amide

MF: $C_{27}H_{27}NO_7$ **FW:** 477.1 **Purity:** ≥98%

A crystalline solid **Stability:** ≥2 years at -20°C

Summary: ACAT-1 and ACAT-2 catalyze the formation of cholesterol esters from cholesterol and long chain fatty acyl-coenzyme A, and may play a role in the development of atherosclerosis. CAY10485 inhibits human ACAT-1 and ACAT-2 with an IC_{50} values of 95 and 81 µM, respectively. It also inhibits copper-mediated oxidation of LDLs by 91% at a concentration of 2 µM.

5 mg
10 mg
50 mg
100 mg

N-[3-(3,4-dihydroxyphenyl)-1-oxopropyl]-L-aspartic acid, bis(phenylmethyl) ester

CAY10486 10006452

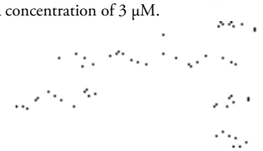
[615264-52-3] 4-Hydroxycinnamic acid (L-phenylalanine methyl ester) amide

MF: $C_{19}H_{19}NO_4$ **FW:** 325.4 **Purity:** ≥98%

A crystalline solid **Stability:** ≥2 years at -20°C

Summary: ACAT-1 and ACAT-2 catalyze the formation of cholesterol esters from cholesterol and long chain fatty acyl-coenzyme A, and may play a role in the development of atherosclerosis. CAY10486 inhibits human ACAT-1 and ACAT-2 equally with an IC_{50} value of approximately 60 µM. It also inhibits copper-mediated oxidation of LDLs by about 28% at a concentration of 3 µM.

5 mg
10 mg
50 mg
500 mg



N-[3-(4-hydroxyphenyl)-1-oxo-2-propenyl]-L-phenylalanine, methyl ester

CAY10487 10006480

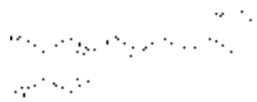
[778624-05-8] 3,4-Dihydrocinnamic Acid (L-alanine methyl ester) amide

MF: $C_{13}H_{15}NO_5$ **FW:** 265.3 **Purity:** ≥98%

A crystalline solid **Stability:** ≥2 years at -20°C

Summary: CAY10487 inhibits formation of fatty streak lesions of the thoracic aorta in high cholesterol-fed rabbits without affecting plasma lipid profiles or significantly inhibiting ACAT-1 or ACAT-2 activity. The percent area occupied by the atherosclerotic lesion in rabbits supplemented with 0.05% CAY10487 in the diet was 16.1% compared to 53.5% in control rabbits. CAY10487 also exhibits antioxidant activity, inhibiting copper-mediated oxidation of LDL by about 75% at a concentration of 2 µM.

5 mg
10 mg
50 mg
500 mg



N-[(2E)-3-(3,4-dihydroxyphenyl)-1-oxo-2-propenyl]-L-alanine, methyl ester

NEW CAY10499 10007875

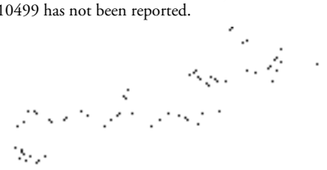
[359714-55-9]

MF: $C_{18}H_{17}N_3O_5$ **FW:** 355.3 **Purity:** ≥98%

A crystalline solid **Stability:** ≥2 years at -20°C

Summary: Hormone sensitive lipase (HSL) catalyzes the hydrolysis of tri-, di-, and monoacylglycerols, as well as cholesterol esters, thus mobilizing fatty acids as a primary source of energy in mammals. CAY10499 is a potent inhibitor of human HSL exhibiting an IC_{50} value of 90 nM for the recombinant enzyme. The *in vivo* pharmacological efficacy of CAY10499 has not been reported.

1 mg
5 mg
50 mg
100 mg



[4-(5-methoxy-2-oxo-1,3,4-oxadiazol-3(2H)-yl)-2-methylphenyl]-carbamic acid, phenylmethyl ester

NEW CAY10514 10009017

[868526-38-9] Methyl-8-hydroxy-8-(2-pentyl-oxyphenyl)-oct-5-ynoate

MF: $C_{20}H_{28}O_4$ **FW:** 332.4 **Purity:** ≥98%

A solution in methyl acetate **Stability:** ≥1 year at -20°C

Summary: CAY10514 is an aromatic analog of 8(S)-HETE. It acts as a dual agonist of PPARα and PPARγ with EC_{50} values of 0.173 and 0.642 µM, respectively.

1 mg
5 mg
10 mg
50 mg

8-hydroxy-8-[2-(pentyloxy)phenyl]-5-octynoic acid, methyl ester

CD36 Monoclonal Antibody 188150

GPIIIb, GPIV, Hexarelin Receptor, oxLDL Receptor, Thrombospondin Receptor

Purified mouse anti-CD36 IgA **Stability:** ≥1 year at -20°C

Summary: Antigen: adenovirus expressing full-length murine recombinant CD36 • Host: CD36 null mouse, clone JC63.1 • Cross-reactivity: (+) murine, rat, and human CD36 • Applications: flow cytometry and functional blocking • CD36 is a type-B scavenger receptor that is necessary for the formation of foam cells in atherosclerotic lesions.

100 µg
500 µg

CD36 Polyclonal Antibody 100011

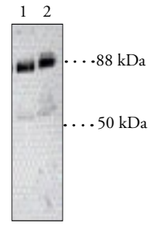
GPIIIb, GPIV, Hexarelin Receptor, oxLDL Receptor, Thrombospondin Receptor

Peptide affinity-purified IgG **Stability:** ≥1 year at -20°C

Summary: Antigen: human CD36 amino acids 99-114 • Host: rabbit • Cross-reactivity: (+) human, murine, and rat CD36 • Application: WB • CD36 is a type-B scavenger receptor that is necessary for the formation of foam cells in atherosclerotic lesions.

1 ea

Lane 1: *Human platelet lysate (15 µg)*
Lane 2: *Human platelet lysate (30 µg)*



Also Available: *CD36 Blocking Peptide (300011)* *200 µg*

NEW Cetaben 10007171

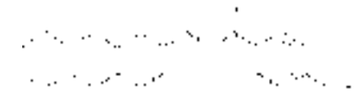
[55986-43-1] Hexadecylamino-p-amino Benzoic Acid

MF: $C_{23}H_{39}NO_2$ **FW:** 361.6 **Purity:** ≥98%

A crystalline solid **Stability:** ≥2 years at -20°C

Summary: Cetaben is a unique, PPARα-independent peroxisome proliferator with hypolipidemic activity, characterized by reduction in serum TG and cholesterol concentrations in rats. In male wistar rats, cetaben increased the activity of all peroxisomal enzymes examined in liver and kidney, whereas clofibrate showed a varied regulatory pattern. Cetaben inhibits cholesterol synthesis in the human hepatoma HepG2 cells resulting in reversible changes in Golgi morphology. It also blocked TG synthesis by 99% and reduced cholesterol ester synthesis by >70% at a concentration of 50 µM in these same cells.

5 mg
10 mg
50 mg
100 mg



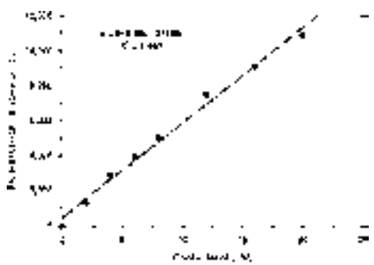
4-(hexadecylamino)-benzoic acid

NEW Cholesterol Assay Kit 10007640

Stability: ≥1 year at -20°C

Summary: Cholesterol, particularly in the form of LDLs, is well understood to be associated with increased risk of coronary heart disease. The measurement of cholesterol is one of the most common tests performed in the clinical laboratory setting. However, simple and easy assays for cholesterol in the research lab have not been readily available. Cayman's Cholesterol Assay provides a simple fluorometric method for the sensitive quantitation of total cholesterol in plasma or serum.

96 wells
480 wells



All 5-cis 2-series PGs (those containing a 5,6-double bond) will contain a small amount of the 5-trans isomer. This isomer is generally undetectable using normal phase silica columns and plates, but may be resolved using RP-HPLC. The purity for all such 2-series PGs excludes the 1-3% trans isomer which will generally be present.

Tom Brock, Ph.D.

Cholesterol Trafficking

Cholesterol is an essential component of cells and is used in the synthesis of steroid hormones. Consistent with its importance, cholesterol synthesis and metabolism are tightly regulated. However, serum cholesterol in particular is thought to be a key factor leading to the development of vascular disease, with the most prevalent form of vascular disease being arteriosclerosis.

Cholesterol from the diet

Surprisingly, the diet is only a minor source of cholesterol. According to the American Heart Association, Americans who eat meat typically take in 200-400 mg cholesterol each day. This amount, from the atherogenic Western diet, is less than half of what the body synthesizes each day. At the intestine, cholesterol is absorbed into enterocytes by a mechanism involving Niemann Pick C1-like protein 1 (NPC1L1). As suggested by its name, this protein is similar to NPC1, which mediates intracellular cholesterol trafficking from the lysosome to the endoplasmic reticulum and the plasma membrane. The NPC1L1 protein is abundant on intestinal brush border membranes. Rare, naturally occurring variants in NPC1L1 are associated with either high or low absorption of dietary cholesterol.[1] The uptake of cholesterol by NPC1L1 can be blocked by the medication ezetimibe. Free cholesterol taken up by the intestines can be moved through hepatic portal vessels to the liver. Alternatively, it may be packaged, with triacylglycerol and apolipoproteins, into lipoprotein particles called chylomicrons and released into the circulatory system. Chylomicrons are the largest and least dense of the lipoproteins. Lipoproteins consist of a lipid core of cholesteryl esters (cholesterol esterified with fatty acid) and triacylglycerol with a shell of free cholesterol, phospholipids and apolipoproteins. Triacylglycerol consists of three fatty acids acylated to a three carbon glycerol backbone. Apolipoproteins are lipid-binding proteins that stabilize the aggregation of many lipid molecules into each lipoprotein particle. The apolipoproteins also can associate with and modulate the activity of enzymes that process lipids. Finally, the apolipoproteins serve as ligands for specific receptors that mediate lipoprotein clearance by endocytosis. The major apolipoproteins in chylomicrons are ApoB-48, ApoC, and ApoE. In fact, chylomicrons are relatively large (100-500 nm diam.) particles composed primarily of triacylglycerol, which affords a very low density (<0.95 g/ml). In the circulatory and lymphatic systems, lipids are released from chylomicrons by lipoprotein lipases, which use ApoC-II in the chylomicron as an activator. The free fatty acids from triacylglycerol degradation are absorbed by muscle and adipose tissue, leaving chylomicron remnants. These remnants are ultimately removed by the liver by the LDL receptor, which recognizes ApoB-48 and ApoE on the remnant surface. In the liver, excess cholesterol may be incorporated into bile acids for secretion, *via* the bile duct, to the intestine. Much of this cholesterol is returned to the liver, again by absorption by enterocytes and migration through hepatic portal vessels.

Distribution of cholesterol

The major source of cholesterol is *de novo* synthesis, within the liver, the intestines and other sites. Cholesterol is synthesized by the mevalonate pathway, with early steps involving the synthesis of hydroxymethylglutaryl-coenzyme A (HMG-CoA) from acetyl-CoA. The rate-limiting step in cholesterol biosynthesis involves the conversion of HMG-CoA to mevalonate by HMG-CoA reductase; this step is inhibited by statins. Free cholesterol in the liver is packaged with triacylglycerol and apolipoproteins (predominantly ApoB-100, ApoC, and ApoE) to produce very low density lipoprotein (VLDL), which is released into circulation. The triacylglycerol within VLDL is progressively hydrolyzed by lipases, which act as glycerol-*sn*-1-fatty acid hydrolases. The best known of these is lipoprotein lipase (LPL), but triacylglycerol within lipoproteins are hydrolyzed by others, including endothelial lipase (EL) and hepatic lipase (HL). LPL is present on capillary endothelial surfaces in mammary, muscle, and adipose tissues and is activated by ApoC-II, which is found on most types of lipoproteins. EL is expressed in endothelium from a wide variety of tissues and its expression is up-regulated by inflammatory cytokines, such as TNF-α and IL-1β. HL is produced by hepatocytes and remains primarily at the liver and associated endothelium. The liberated fatty acids produced by these enzymes are absorbed by smooth muscle and adipocytes. Hydrolysis of triacylglycerol reduces the triacylglycerol:cholesterol ratio, increasing lipoprotein density, producing intermediate and low density lipoproteins (IDL, LDL). Each LDL particle is very small (18-28 nm diam.) with very little triacylglycerol; a higher protein to cholesterol ratio leads to a higher density (1.019-1.063 g/ml). Each LDL particle contains a single molecule of the ~510 kDa ApoB-100 protein, as well as a variety of the smaller apolipoproteins. LDL serves to transport cholesterol in the blood to peripheral tissues and regulates *de novo* cholesterol synthesis at those sites after being captured by an LDL receptor (LDLR). Ultimately, the LDL remnants are captured at the liver by LDLRs on hepatocytes. The LDLRs recognize ApoB-100 and ApoE, endocytose the remnants and recycle remaining cholesterol to bile or new VLDL.

Lipids in LDL may become oxidized by free radicals in the form of reactive oxygen and nitrogen species, producing oxidized LDL (oxLDL) particles. Oxidization appears to occur both on lipids and apolipoproteins in LDL. These damaged particles are recognized by scavenger receptors (SR-A, CD36) on macrophages, endothelial cells, and dendritic cells. Macrophages are of particular interest in cholesterol trafficking as they consume and accumulate cholesterol and also release cholesterol for transport back to the liver. These macrophages may be found at or below the endothelial surface, interspersed in the smooth muscle layer, as well as throughout the adjacent adipose tissue. Macrophages that consume sufficient oxLDL become foam cells, which accumulate in the fatty streaks that are early indicators of atherosclerosis. OxLDL may be degraded by the cytoplasmic enzyme PAF acetyl hydrolase. Unoxidized LDL is ultimately removed from the blood by the liver *via* LDLRs.

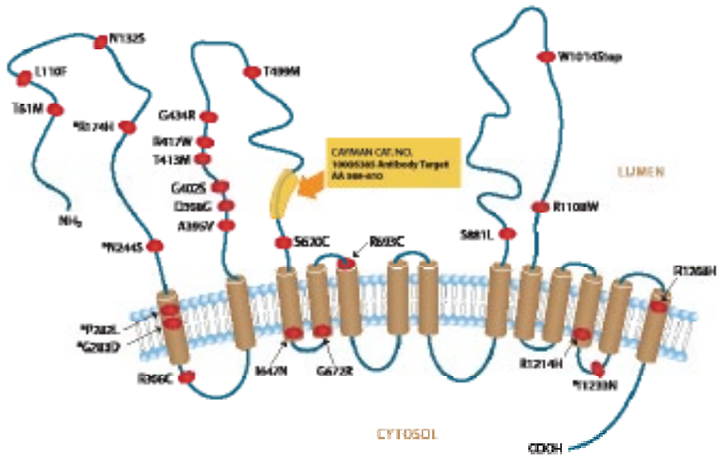


Figure 1. Predicted NPC1L1 Topology and Naturally Occurring Mutations Most mutations are associated with reduced cholesterol absorption, with only four mutations (asterisked) found in patients with high cholesterol absorption.

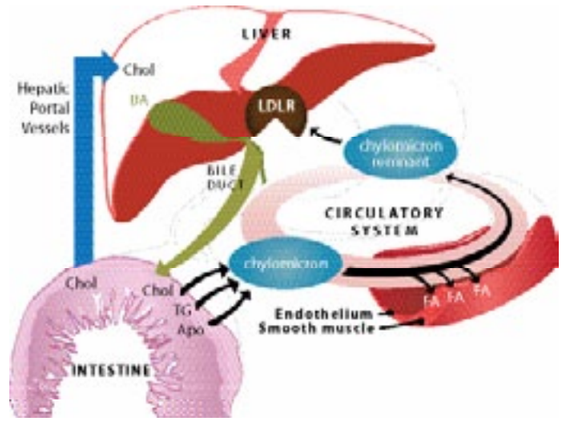


Figure 2. Dietary Cholesterol Trafficking

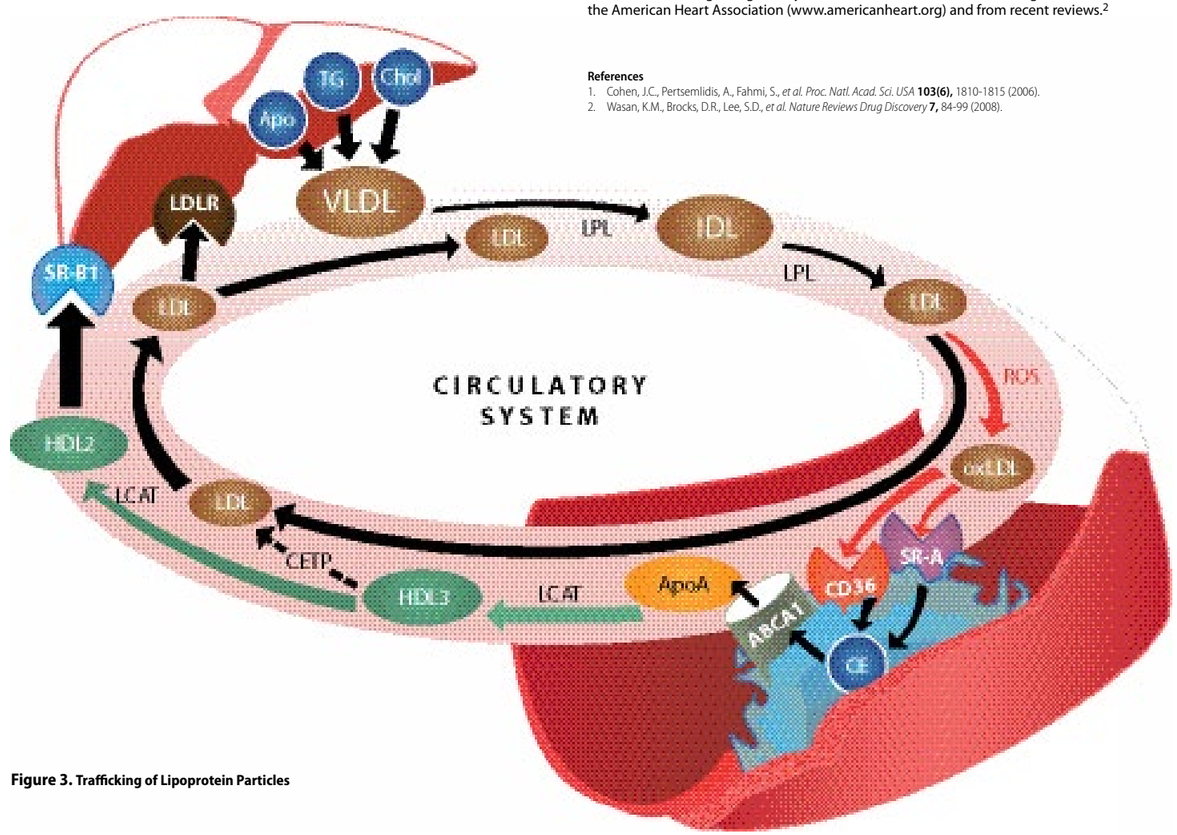


Figure 3. Trafficking of Lipoprotein Particles

Additional detail regarding dietary cholesterol and cholesterol trafficking is available from the American Heart Association (www.americanheart.org) and from recent reviews.[2]

References

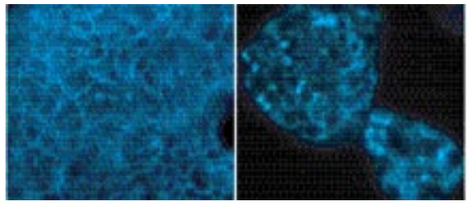
1. Cohen, J.C., Pertsemlidis, A., Fahmi, S., *et al. Proc. Natl. Acad. Sci. USA* **103(6),** 1810-1815 (2006).
2. Wasan, K.M., Brocks, D.R., Lee, S.D., *et al. Nature Reviews Drug Discovery* **7,** 84-99 (2008).

Characteristics of Lipoproteins								
Lipoprotein Class	**Density (g/ml)**	**Diameter (nm)**	**Major Apolipoproteins**	**Protein (% dry wt)**	**Phospholipid (%)**	**Triacylglycerol (% dry wt)**	**Cholesterol (% dry wt)**	**Function**
HDL	1.063-1.21	5-15	ApoA1, ApoE	33	29	8	12-25	Reverse cholesterol transport
LDL	1.019-1.063	18-28	ApoB-100, ApoE	25	21	4	43-50	Cholesterol transport to all tissues
IDL	1.006-1.019	25-50	ApoB-100, ApoE	18	22	31	25-33	Transport of endogenous triacylglycerols
VLDL	0.95-1.006	30-80	ApoB-100, ApoE	10	18	50	17-27	Transport of endogenous triacylglycerols
chylomicrons	< 0.95	100-500	ApoB-48	1 - 2	7-9	84	2-4	Transport of exogenous triacylglycerols and cholesterol

NEW Cholesterol Cell-Based Detection Assay Kit 10009779

Stability: ≥6 months at -20°C
Summary: The mechanism for the movement of cholesterol from intracellular sites to their ultimate cellular destination is an unresolved question of fundamental importance to cell biology and medicine. Thus, defining mechanisms of intracellular cholesterol transport and identifying the cellular factors involved are therefore of great interest. Cayman's Cholesterol Cell-based Detection Assay Kit includes filipin III, fixative, and wash buffer in a ready to use format. It provides a simple fluorometric method to study mechanisms and biological factors that regulate cholesterol metabolism or movement within cells. A cholesterol trafficking inhibitor, U-18666A, is included as a positive control.

192 wells

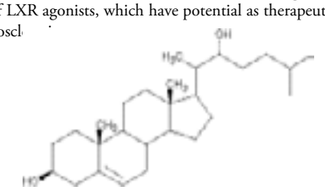


Accumulation of cholesterol inside HepG2 cells in response to 1.25 µM U18666A. HepG2 cells were seeded in a 96-well plate at a density of 3 x 10^4 cells/well and cultured overnight. The next day, cells were treated with DMSO (vehicle) or 1.25 µM U-18666A for 48 hours. **Left panel:** Cells treated with DMSO alone demonstrate that majority of cholesterol is localized on the plasma membrane. **Right panel:** U-18666A treatment for 48 hours induces intracellular accumulation of cholesterol droplets, indicating blockage of intracellular cholesterol transport.

22(R)-hydroxy Cholesterol 89355

[17954-98-2] 22α-hydroxy Cholesterol
MF: $C_{27}H_{46}O_2$ **FW:** 402.7 **Purity:** ≥98%
A crystalline solid **Stability:** ≥1 year at -20°C
Summary: 22(R)-OH-Ch is an endogenous agonist for LXRα and LXRβ. The EC_{50} value for ligand-dependent activation of LXRα by 22(R)-OH-Ch is approximately 325 nM. Acting through LXR in concert with RXR, its heterodimerization partner, 22(R)-OH-Ch induces the expression of the ABCA1 reverse cholesterol transporter. This acts to increase the efflux of cholesterol from enterocytes and thus inhibit the overall absorption of cholesterol. 22(R)-OH-Ch can be used as an endogenous positive control for the testing of LXR agonists, which have potential as therapeutic agents for the treatment of atherosclerosis.

1 mg
5 mg
10 mg
50 mg

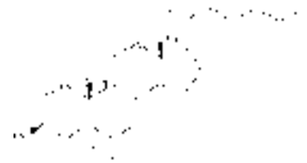


cholest-5-ene-3β,22R-diol

NEW 5α-hydroxy-6-keto Cholesterol 10007601

[13027-33-3] Cholestane-6-oxo-3β,5α-diol
MF: $C_{27}H_{46}O_3$ **FW:** 418.7 **Purity:** ≥98%
A crystalline solid **Stability:** ≥2 years at -20°C
Summary: 5α-hydroxy-6-keto Cholesterol is a major metabolite of cholesterol formed during exposure of lung epithelial cells to ozone, with formation of 5β,6β-epoxycholesterol as a predominant precursor. Exposure of C57BL/6J mice to 0.5-3 ppm ozone produced a dose-dependent formation of 5α-hydroxy-6-keto cholesterol which was detectable in the bronchalveolar lavage fluid, lavaged cells, and lung homogenates. 5α-hydroxy-6-keto Cholesterol is a potent inhibitor of cholesterol synthesis in human bronchial epithelial cells with an IC_{50} value of 350 nM and exhibits significant cytotoxicity in the low µM range. Therefore, the toxic effects of ozone may be mediated by formation oxysterols of this type.

1 mg
5 mg
10 mg
50 mg



3β,5α-dihydroxy-cholestan-6-one

Cholesteryl Linoleate Hydroperoxides 48001

MF: $C_{45}H_{76}O_4$ **FW:** 681.1 **Purity:** ≥98% hydroperoxide content
A solution in ethanol **Stability:** ≥6 months at -80°C
Summary: Cholesteryl linoleate hydroperoxides are derived from the autoxidation of cholesteryl linoleate and contain a mixture of racemic 9- and 13-HpODE cholesteryl esters. (±)9- and (±)13-HODE cholesteryl esters were originally extracted from atherosclerotic lesions and shown to be produced by Cu^{2+}-catalyzed oxidation of LDL. 15-LO from rabbit reticulocytes and activated human monocytes oxygenates cholesteryl linoleate to both 9- and 13-hydroperoxy linoleate cholesteryl esters. Cholesteryl ester hydroperoxides may be transferred from LDL to HDL, reduced to the corresponding hydroxides, and cleared *via* the liver.

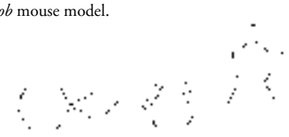
100 µg
500 µg
1 mg
5 mg

(±)-9-hydroperoxy-10E,12Z-octadeca-dienoic acid, cholesteryl ester;
(±)-13-hydroperoxy-9Z,11E-octadeca-dienoic acid, cholesteryl ester

Ciglitazone 71730

[74772-77-3] ADD 3878, U-63287
MF: $C_{18}H_{23}NO_3S$ **FW:** 333.4 **Purity:** ≥98%
A crystalline solid **Stability:** ≥1 year at -20°C
Summary: Ciglitazone is an antidiabetic drug of the thiazolidinedione structural class that acts as a potent and selective PPARγ ligand. It binds to the PPARγ ligand-binding domain with an EC_{50} value of 3.0 µM. Ciglitazone is active *in vivo* as an anti-hyperglycemic agent in the *ob/ob* mouse model.

1 mg
5 mg
10 mg
50 mg



5-[[4-[(1-methylcyclohexyl)methoxy]phenyl]methyl]-2,4-thiazolidinedione

Ciprostene (calcium salt) 18216

[81703-55-1] U-61431F
MF: $[C_{22}H_{36}O_4]_2$ • Ca **FW:** 384.6 **Purity:** ≥98%
A crystalline solid **Stability:** ≥6 months at -20°C
Summary: Ciprostene is the 9β-methyl analog of carbaprostacyclin and a stable analog of PGI_2. Ciprostene exhibits biological activity similar to PGI_2, but is 30-fold less potent. In patas monkeys, ciprostene induces hypotension and causes tachycardia when administered at a dose of 0.16 µg/kg/min. In addition, ciprostene inhibits ADP-induced platelet aggregation *ex vivo* and *in vitro* with ID_{50} values of 9.1 µg/kg/min and 60 ng/ml, respectively.

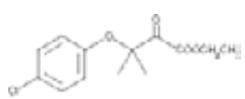
1 mg
5 mg
10 mg
50 mg

6,9α-methylene-9β-methyl-11α,15S-dihydroxy-prosta-5Z,13E-dien-1-oic acid, calcium salt

Clofibrate 10005745

[637-07-0]
MF: $C_{12}H_{15}ClO_3$ **FW:** 242.7 **Purity:** ≥98%
A colorless liquid **Stability:** ≥1 year at -20°C
Summary: Clofibrate is PPARα agonist and a member of a class of hypolipidemic drugs that includes fenofibrate and benzafibrate, which have been used clinically to treat dyslipidemia and cardiovascular disease. In a transactivation assay, clofibrate exhibits EC_{50} values of 50 and 55 µM for murine and human PPARα, respectively. It also binds to PPARγ, but with 10-fold less affinity and is inactive at PPARδ at concentrations up to 100 µM.

500 µl
1 ml
5 ml
10 ml



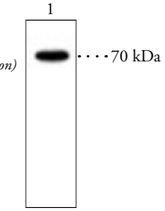
2-(4-chlorophenoxy)-2-methyl-propanoic acid, ethyl ester

Inhibitors of Lipoprotein Modifying Enzymes			
Cat. No.	**Catalog Name**	**Target**	**IC_{50}**
10006482	CAY10485	ACAT-1 and -2	95 µM (ACAT-1); 81 µM (ACAT-2)
10006452	CAY10486	ACAT-1 and -2	60 µM (both enzymes)
10007875	CAY10499	Hormone Sensitive Lipase	90 nM (human)
10006782	Oleic Acid-2,6 -diisopropylanilide	ACAT	7 nM
10006529	Oleyl Anilide	ACAT	26 µM

COX-1 Monoclonal Antibody 160110

Prostaglandin H Synthase 1
Lyophilized IgG **Stability:** ≥3 years at -20°C
Summary: Antigen: purified ovine COX-1 • Host: mouse, clone CX111 • Cross-reactivity: (+) ovine, bovine, human, murine, rat, and monkey COX-1, ovine COX-2 (50%), and human COX-2 (~5%); (-) murine COX-2 • Applications: WB and IHC • Isotype: IgG_{2b}

1 ea



Lane 1: *Ovine COX-1 (microsomal fraction)*

Also Available: *COX-1 Monoclonal FITC Antibody (160111) 1 ea*
COX-1 (murine) Polyclonal Antibody (160109) 1 ea
COX-1 (ovine) Polyclonal Antiserum (160108) 1 ea

$CysLT_1$ Receptor Polyclonal Antibody 120500

Cysteinyl Leukotriene Receptor 1
Peptide affinity-purified IgG **Stability:** ≥2 years at -20°C
Summary: Antigen: human $CysLT_1$ receptor C-terminal amino acids 318-337 • Host: rabbit • Cross-reactivity: (+) human and murine $CysLT_1$ receptor; other species not tested • Applications: WB, ICC, IHC, and flow cytometry • The $CysLT_1$ receptor is one of two receptor isoforms for LTC_4 and LTD_4.

1 ea

Also Available: *$CysLT_1$ Receptor Blocking Peptide (320500) 200 µg*

Cysteinyl Leukotriene EIA Kit 520501

Stability: ≥6 months at -80°C
Summary: The LTs were discovered in 1979 as a group of acute inflammatory mediators derived from arachidonic acid in leukocytes. Their biosynthesis was shown to proceed *via* the 5-LO pathway. LT biosynthesis has subsequently been demonstrated in other bone marrow-derived cells expressing 5-LO including eosinophils, mast cells, and macrophages. 5-LO converts arachidonic acid into LTA_4 with 5(S)-HpETE as an intermediate. The conjugation of glutathione to LTA_4 results in the formation of LTC_4. LTC_4 is rapidly metabolized to LTD_4 and LTE_4. This metabolism is essentially complete within 10 minutes in the human lung. LTC_4, LTD_4, and LTE_4 are collectively referred to as cysteinyl leukotrienes (CysLTs). LTC_4 and LTD_4 are potent mediators of asthma and hypersensitivity. They induce bronchoconstriction, increase microvascular permeability, and are vasoconstrictors of coronary arteries. The biological activity of LTE_4 is much lower in most systems studied, but its presence reflects the prior existence of LTC_4 and LTD_4.

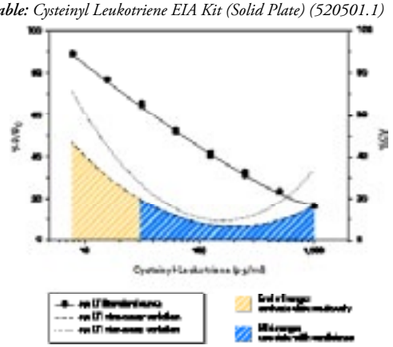
Sensitivity: 50% B/B_0: 57 pg/ml
80% B/B_0: 13 pg/ml

Specificity:

Leukotriene C_4	100%
Leukotriene D_4	100%
Leukotriene E_4	67%
Leukotriene D_5	61%
Leukotriene C_5	54%
Leukotriene E_5	41%
N-acetyl Leukotriene E_4	10.5%
5-HETE	<0.01%
12-HETE	<0.01%
15-HETE	<0.01%
Leukotriene A_3	<0.01%
Leukotriene A_4	<0.01%
Leukotriene B_3	<0.01%
Leukotriene B_4	<0.01%
20-hydroxy Leukotriene B_4	<0.01%
tetranor-PGEM	<0.01%
tetranor-PGEM	<0.01%
Prostaglandin D_2	<0.01%
Prostaglandin E_2	<0.01%
6-keto Prostaglandin $F_{1\alpha}$	<0.01%
Prostaglandin $F_{2\alpha}$	<0.01%
Thromboxane B_2	<0.01%

96 wells
480 wells

Also Available: *Cysteinyl Leukotriene EIA Kit (Solid Plate) (520501.1)*



NEW Diphenyl-1-pyrenylphosphine 62237

[110231-30-6] DPPP
MF: $C_{28}H_{19}P$ **FW:** 386.4 **Purity:** ≥98%
A crystalline solid **Stability:** ≥2 years at -20°C
Summary: DPPP is a probe that reacts stoichiometrically with hydroperoxides to yield the fluorescent molecule DPPP oxide. Plasma levels of lipid hydroperoxides of phosphatidylcholine, phosphatidylethanolamine, TGs, and cholesteryl esters have been measured by HPLC with a post column detection system using DPPP. DPPP has also been used as a fluorescent probe for the detection of LDL and cellular oxidation.

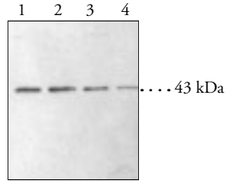
5 mg
10 mg
25 mg
50 mg

diphenyl-1-pyrenylphosphine

NEW DP_1 Receptor Polyclonal Antibody 101640

PGD_2 Receptor, Prostaglandin D_2 Receptor 1
Peptide affinity-purified IgG **Stability:** ≥1 year at -20°C
Summary: Antigen: murine DP_1 receptor N-terminal amino acids 2-21 • Host: rabbit • Cross-reactivity: (+) human, murine, and rat DP_1 receptors; other species not tested • Applications: WB and ICC; other applications not tested • The DP_1 receptor is one of two receptor isoforms for PGD_2.

1 ea



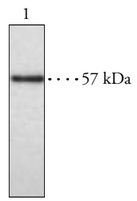
Lane 1: *HT-29 cell lysate (50 µg)*
Lane 2: *HT-29 cell lysate (40 µg)*
Lane 3: *HT-29 cell lysate (30 µg)*
Lane 4: *HT-29 cell lysate (20 µg)*

Also Available: *DP_1 Receptor Blocking Peptide (301640)* *200 µg*

NEW Endothelial Lipase (human) Polyclonal Antibody 100030

EL, EDL
Peptide affinity-purified IgG **Stability:** ≥1 year at -20°C
Summary: Antigen: human endothelial lipase amino acids 19-32 • Host: rabbit • Cross-reactivity: (+) human, murine, rat, porcine, and ovine endothelial lipase • Applications: WB and IHC • EL is a major genetic determinant for the concentration, structure, and metabolism of HDL, which protects against atherosclerosis.

1 ea



Lane 1: *HepG2 cell lysate (30 µg)*

Also Available: *Endothelial Lipase (human) Blocking Peptide (10004111)* *200 µg*

Endothelin EIA Kit 583151

ET
Stability: ≥6 months at -20°C
Summary: The endothelin peptide family consists of three isoforms, ET-1 (corresponding to the initially isolated and most predominant isoform), ET-2, and ET-3. ET-1 is a 21 amino acid peptide and is one of the most potent vasoconstritors currently known. ET-2 displays similar pharmacology to ET-1, whereas ET-3 is a weak vasoconstrictor but more potent inhibitor of platelet aggregation. Cayman's Endothelin Assay is an immunometric (i.e., sandwich) EIA that permits endothelin measurements within the range of 0-250 pg/ml, typically with a limit of detection of 1.5 pg/ml. Inter- and intraassay CV's of less than 10% may be achieved at most concentrations. This assay offers sensitive and specific analysis of endothelin in serum, plasma, urine, or cell culture media.

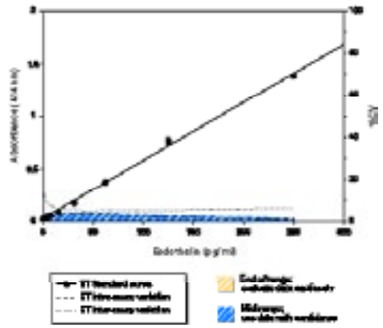
Sensitivity: Limit of detection: 1.5 pg/ml
Specificity:

Endothelin-1	100%
Endothelin-2	100%
Endothelin-3	100%
VIC	100%
Big Endothelin	100%

Homology:

Mammalian Endothelin-1	100%

96 wells
480 wells



NEW FABP1 (human recombinant) 10009547

L-FABP, Liver-FABP
Purity: ≥90% **Stability:** ≥6 months at -80°C
A solution in 50 mM sodium phosphate, pH 7.2, containing 25% glycerol and 100 mM sodium chloride **Stability:** ≥6 months at -80°C
Summary: Source: recombinant N-terminal His-tagged protein expressed in *E. coli* • M_r: 18.3 kDa

25 µg
50 µg
100 µg

NEW FABP1 (rat recombinant) 10005200

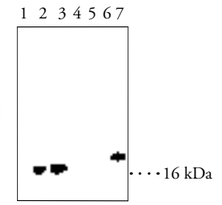
L-FABP, Liver-FABP
Purity: ≥95%
A solution in 50 mM sodium phosphate, pH 7.2, containing 20% glycerol and 150 mM sodium chloride **Stability:** ≥6 months at -80°C
Summary: Source: recombinant N-terminal His-tagged protein expressed in *E. coli* • M_r: 18.3 kDa

25 µg
50 µg
100 µg

NEW FABP2 Polyclonal Antibody 10010019

I-FABP, Intestinal-FABP
Peptide affinity-purified IgG **Stability:** ≥1 year at -20°C
Summary: Antigen: human FABP2 amino acids 33-40 • Host: rabbit • Cross-reactivity: (+) human and rat FABP2; but also expected to work with murine and bovine; (-) recombinant FABP1, 3, 4, and 5 • Application: WB

1 ea



Lane 1: *Rat Recombinant FABP1 (0.4 µg)*
Lane 2: *Rat Recombinant FABP2 (0.025 µg)*
Lane 3: *Rat Recombinant FABP2 (0.050 µg)*
Lane 4: *Human Recombinant FABP3 (0.4 µg)*
Lane 5: *Murine Recombinant FABP4 (0.4 µg)*
Lane 6: *Murine Recombinant FABP5 (0.4 µg)*
Lane 7: *Human Duodenum Homogenate (30 µg)*

Also Available: *FABP2 Blocking Peptide (10010020)* *200 µg*

NEW FABP2 (rat recombinant) 10007938

I-FABP, Intestinal-FABP
Purity: ≥95%
A solution in 50 mM sodium phosphate, pH 7.2, containing 20% glycerol, 100 mM sodium chloride, and 1 mM DTT **Stability:** ≥6 months at -80°C
Summary: Source: recombinant N-terminal His-tagged protein expressed in *E. coli* • M_r: 19.3 kDa

25 µg
50 µg
100 µg

NEW FABP3 (human recombinant) 10007432

H-FABP, Heart-FABP
Purity: ≥95%
A solution in 50 mM sodium phosphate, pH 7.2, containing 20% glycerol and 150 mM sodium chloride **Stability:** ≥6 months at -80°C
Summary: Source: recombinant N-terminal His-tagged protein expressed in *E. coli* • M_r: 19 kDa

25 µg
50 µg
100 µg

FABP4 (human) EIA Kit* 10007614

A-FABP, Adipocyte-FABP, ALBP, aP2
Stability: ≥6 months at 4°C
Summary: FABP4 is a 15 kDa member of the intracellular FABP family, which is known for the ability to bind fatty acids and related compounds (bile acids or retinoids). FABP4 is expressed in a differentiation-dependent fashion in adipocytes and is a critical gene in the regulation of the biological function of these cells. In mice, targeted mutations in the FABP4 gene (also called aP2) provides significant protection from hyperinsulinemia and insulin resistance in the context of both dietary and genetic obesity. FABP4 is also expressed in macrophages where it modulates inflammatory responses and cholesterol ester accumulation. Total or macrophage-specific FABP deficiency confers dramatic protection against atherosclerosis in $ApoE^{-/-}$ mice. These results indicate a central role for FABP4 in development of metabolic diseases through its distinct actions in adipocytes and macrophages. This EIA is based on a double-antibody sandwich technique. The wells of the plate supplied with the kit are coated with a goat polyclonal antibody specific of human FABP4. This antibody will bind any human FABP4 introduced in the wells (sample or standard).

Specificity:

FABP4 (chicken)	<0.1%
FABP4 (goat)	<0.1%
FABP4 (hamster)	<0.1%
FABP4 (equine)	<0.1%
FABP4 (murine)	<0.1%
FABP4 (ovine)	<0.1%
FABP4 (porcine)	<0.1%
FABP4 (rabbit)	<0.1%
FABP4 (rat)	<0.1%
Leptin (human)	<0.1%
Leptin Receptor (human)	<0.1%
Resistin (human)	<0.1%

96 wells

NEW FABP4 (human recombinant) 10009549

A-FABP, Adipocyte-FABP, ALBP, aP2
Purity: ≥95%
A solution in 50 mM of sodium phosphate, pH 7.2, containing 150 mM sodium chloride, and 20% glycerol **Stability:** ≥6 months at -80°C
Summary: Source: human recombinant N-terminal His-tagged protein expressed in *E. coli* • M_r: 18.8 kDa

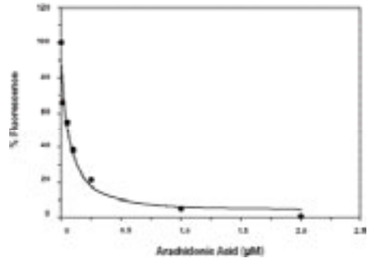
25 µg
50 µg
100 µg

**SPI-BIO Assays are available through Cayman Chemical only within North & South America and Asia; elsewhere contact SPI-BIO.*

NEW FABP4 Inhibitor/Ligand Screening Assay Kit 10010231

A-FABP, Adipocyte-FABP, ALBP, aP2
Stability: ≥6 months at -80°C
Summary: FABP4 is highly expressed in adipocytes and is regulated by PPARγ agonists, insulin, and fatty acids. Recent studies using FABP4 gene deletion in mice indicate a dominant role for FABP4 in several chronic metabolic diseases. Therefore, inhibiting the function of FABP4 is a potential mechanism for the treatment of metabolic diseases like diabetes and atherosclerosis. Cayman's FABP4 Ligand Binding Assay Kit provides a simple, reproducible, and sensitive tool for the identification of FABP4 ligands. The assay makes use of a Detection Reagent that exhibits increased fluorescence at 500 nm when bound to FABP4. Any strong ligand and/or inhibitor of FABP4 will displace the Detection Reagent thereby reducing the fluorescence. FABP4 is provided in high purity and in sufficient quantity for 100 tests.

96 wells



NEW FABP4 (murine recombinant) 10005191

A-FABP, Adipocyte-FABP, ALBP, aP2
Purity: ≥95%
A solution in 50 mM sodium phosphate, pH 7.2, containing 20% glycerol and 150 mM sodium chloride **Stability:** ≥6 months at -80°C
Summary: Source: murine recombinant N-terminal His-tagged protein expressed in *E. coli* • M_r: 19.5 kDa

25 µg
50 µg
100 µg

NEW FABP4 (murine recombinant) Western Ready Control 10009676

A-FABP, Adipocyte-FABP, ALBP, aP2
Purity: 18 kDa (His-tagged), 15 kDa (native)
Stability: ≥6 months at -20°C
Summary: Source: murine recombinant His-tagged protein expressed in *E. coli* • Application: Positive control for WB

1 ea

NEW FABP4 Polyclonal Antibody 10004944

A-FABP, Adipocyte-FABP, ALBP, aP2
Peptide affinity-purified IgG **Stability:** ≥1 year at -20°C
Summary: Antigen: human FABP4 amino acids 103-118 • Host: rabbit • Cross-reactivity: (+) human, murine, and rat FABP4; other species not tested • Applications: WB and ICC; other applications not tested

1 ea

Lane 1: *His-tagged recombinant rat FABP4 lysate (1 µg)*
Lane 2: *Rat brown fat (30 µg)*

Also Available: FABP4 Blocking Peptide (10006248) 200 µg

NEW FABP4 Western Ready Control 10010463

A-FABP, Adipocyte-FABP, ALBP, aP2
Purity: 18.8 kDa (His-tagged), 16 kDa (native)
Stability: ≥1 year at -20°C
Summary: Source: human recombinant N-terminal His-tagged protein expressed in *E. coli* • Application: Positive control for WB

1 ea

NEW FABP5 (human recombinant) 10010364

DA11 FABP, E-FABP, Epidermal-FABP, Keratinocyte FABP, Psoriasis-Associated FABP
Purity: ≥95%
A solution in 50 mM sodium phosphate, pH 7.2, containing 20% glycerol and 100 mM sodium chloride **Stability:** ≥6 months at -80°C
Summary: Source: recombinant N-terminal His-tagged protein expressed in *E. coli* • M_r: 18 kDa

25 µg
50 µg
100 µg

NEW FABP5 (murine recombinant) 10007433

DA11 FABP, E-FABP, Epidermal-FABP, Keratinocyte FABP, Psoriasis-Associated FABP
Purity: ≥95%
A solution in 50 mM sodium phosphate, pH 7.2, containing 20% glycerol and 150 mM sodium chloride **Stability:** ≥6 months at -80°C
Summary: Source: recombinant N-terminal His-tagged protein expressed in *E. coli* • M_r: 19.3 kDa

25 µg
50 µg
100 µg

NEW FABP7 (human recombinant) 10009551

B-FABP, Brain-FABP
Purity: ≥90%
A solution in 50 mM sodium phosphate, pH 7.2, containing 20% glycerol and 100 mM sodium chloride **Stability:** ≥6 months at -80°C
Summary: Source: recombinant N-terminal His-tagged protein expressed in *E. coli* • M_r: 19 kDa

25 µg
50 µg
100 µg

Fenofibrate 10005368

[49562-28-9]
MF: $C_{20}H_{21}ClO_4$ **FW:** 360.8 **Purity:** ≥98%
A crystalline solid **Stability:** ≥2 years at -20°C
Summary: Fenofibrate is a PPARα agonist and a member of a class of hypolipidemic drugs that includes clofibrate and benzafibrate, which have been used clinically to treat dyslipidemia and cardiovascular disease. In a transactivation assay, fenofibrate exhibits EC_{50} values of 18 and 30 µM for murine and human PPARα, respectively. It also binds to PPARγ, but with at least 10-fold less affinity and is inactive at PPARδ at concentrations up to 100 µM.

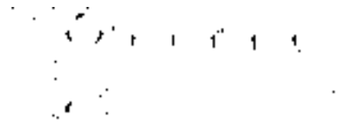
1 g
5 g
10 g
50 g

2-[4-(4-chlorobenzoyl)phenoxy]-2-methyl-propanoic acid, 1-methylethyl ester

Filipin III 70440

[480-49-9]
MF: $C_{35}H_{58}O_{11}$ **FW:** 654.8 **Purity:** ≥85%
A crystallline solid **Stability:** ≥1 year at -20°C
Summary: Filipin is the collective name given to four isomeric polyene macrolides isolated from cultures of *S. filipinensis*; Filipin III is the predominant isomer and the one used in most studies. Filipin binds to cholesterol in membranes, forming ultrastructural aggregates and complexes which can be visualized by freeze-fracture and electron microscopy. The binding of cholesterol decreases the intrinsic fluorescence of Filipin, and this property has been used to detect cholesterol in membrane fractions and whole cells.

1 mg
5 mg
10 mg
50 mg

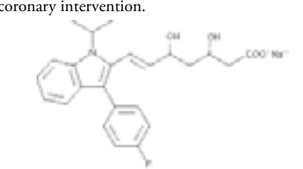


4S,6S,8S,10R,12R,14R,16S,27S-octahydroxy-3R-(1R-hydroxy-hexyl)17,28R-dimethyl-oxacyclooctacosa-17E,19E,21E,23E,25E-pentaen-2-one

NEW Fluvastatin (sodium salt) 10010337

[93957-54-1]
MF: $C_{24}H_{26}FNO_4$ • Na **FW:** 433.5 **Purity:** 98%
A crystalline solid **Stability:** ≥2 years at -20°C
Summary: Fluvastatin is a competitive inhibitor of HMG-CoA reductase with respect to binding of the substrate HMG-CoA (K_i = 0.3 nM), but not with respect to binding of NADPH. When included in a clinical trial, LDL cholesterol levels were reduced by 27% after six weeks of treatment with a dose of 40 mg/kg twice a day in patients undergoing percutaneous coronary intervention.

10 mg
25 mg
50 mg
100 mg



7-[3-(4-fluorophenyl)-1-(1-methylethyl)-1H-indol-2-yl]-3,5-dihydroxy-6-heptenoic acid, sodium salt

FR122047 (hydrate) 10039

MF: $C_{23}H_{25}N_3O_3S$ • HCl[H_2O] **FW:** 478.01 **Purity:** ≥98%
A crystalline solid **Stability:** ≥1 year at -20°C
Summary: FR122047 is a selective inhibitor of COX-1. The IC_{50} values for inhibition of human COX-1 and COX-2 are 0.028 and 65 µM, respectively. In human platelet-rich plasma, FR122047 inhibits arachidonic acid, collagen, and ADP-induced platelet aggregation with an IC_{50} value of 180-200 nM, which is nearly 100 times more potent than aspirin.

1 mg
5 mg
10 mg
50 mg

1-[[4,5-bis(4-methoxyphenyl)-2-thiazolyl]carbonyl]-4-methyl-piperazine, monohydrochloride hydrate

Tom Brock, Ph.D.

Inflammation in Atherosclerosis

Oxidants and Oxidized Phospholipids

Nothing has galvanized the health consciousness of the general public quite like the vilification of cholesterol. Despite universal convictions that "cholesterol is bad for you," the truth is much less clear. External, dietary cholesterol is clearly a minor player. Internal, plasma cholesterol is one of several clear risk factors – but the liver orchestrates this show. There's "bad" cholesterol, LDL, and then there's "really bad" cholesterol, oxidized LDL (oxLDL). LDL is taken up by many cell types through the LDL receptor, delivering cholesterol that suppresses the synthesis of additional cholesterol. On the other hand, oxLDL is accumulated without restriction by macrophages, captured by scavenger receptors (*e.g.*, CD36 and SR-A) and promotes differentiation to foam cells. In addition, oxLDL is absorbed by vascular smooth muscle after induction of SR-A. This indicates that the generation of oxidants that oxidize LDL is a critical step in the production of really bad cholesterol.

Curiously, reactive oxygen species (ROS) and nitric oxide (NO) are normal products of a healthy vascular system. ROS are formed as a by-product of the normal metabolism of oxygen and are involved in intracellular signalling and in ATP generation in all cells. NO, produced by endothelial cells, inhibits monocyte adhesion, reduces vascular tone and inhibits platelet aggregation. However, several factors, including inflammation, can dramatically increase the production of ROS. Superoxide ($O_2^{\bullet-}$), hydrogen peroxide (H_2O_2), and hydroxyl radical ($OH^{\bullet}$) are powerful oxidants associated with the phagocytic oxidative burst. These molecules damage lipids, proteins, RNA, and DNA, and transform already dangerous LDL into its most lethal form. Or they can react with NO to produce peroxynitrite ($ONOO^-$) another damaging ROS.

ROS attack polyunsaturated fatty acids (PUFA) in phospholipids on cell membranes and lipoprotein particles. Oxidation of the *sn*-2 PUFA can lead to cleavage of the PUFA to release a short hydrocarbon chain with a highly reactive aldehyde end group. Examples include 4-hydroxy-2-nonenal (HNE) and 4-hydroxy-2-hexenal (HHE). These lipids form adducts with proteins; specific antibodies against protein-bound HNE or HHE have been found in atherosclerotic lesions. These hydroxyl alkenals can also covalently bind to the primary amine moiety of ethanolamine phospholipids (PE), and their carboxylic acid metabolites can be measured in urine as an indicator of oxidative stress.[1]

Cleavage of *sn*-2 PUFA leaves an oxidized phospholipid (oxPL) with a truncated *sn*-2 residue, modified with an aldehyde or keto group. Examples include 1-palmitoyl-2-(5-oxovaleroyl)-*sn*-glycero-3-phosphorylcholine (POV-PC), 1-palmitoyl-2-glutaroyl-*sn*-glycero-3-phosphorylcholine (PG-PC), and 1-palmitoyl-2-(5-keto-6-octene-dioyl) phosphatidylcholine (KOdiA-PC). The polar aldehyde/keto group induces a conformational change in head group position. Also, the polar group re-orients the *sn*-2 side chain toward the aqueous phase, producing a "lipid whisker" projecting from the phospholipid bilayer.[2] Thus displayed, the oxidized lipid presents a pattern recognized by scavenger receptors, such as CD36. The model, then, is that increased ROS will oxidize phospholipids on the surface of LDL particles which subsequently serve as targets for pattern recognition receptors and, in particular, scavenger receptors. Important questions remain regarding the regulation of these receptors in the context of atherosclerosis.

oxPL initiate and modulate many of the cellular events seen in the developing fatty streak. Complex mixtures of oxPL induce an inflammatory response by the induction of pro-inflammatory genes (MCP-1, IL-8, tissue factor, etc). In endothelial cells, oxPL change the expression of genes related to angiogenesis, atherosclerosis, inflammation, and wound healing. In addition oxPL activate platelets, induce adherence, and differentiation of monocytes and promote the dedifferentiation of smooth muscle cells--processes related to plaque formation. oxPL act *via* transcription factors such as PPARα, PPARγ, NFAT, and Egr-1. An example is the potent PPARγ ligand azelaoyl PAF. They also modulate the fate of an inflammatory response by intervening into such processes as removal of apoptotic cells and by dampening bacterial-induced inflammation.

The recently identified lipoprotein-associated phospholipase A_2 (Lp-PLA_2, same as PAF acetyl hydrolase, PAF-AH) hydrolyzes the *sn*-2 fatty acid of oxLDL in lesion-prone artery walls yielding the pro-inflammatory, atherogenic by-products lysophosphatidylcholine and oxidized nonesterified fatty acids. In turn, these bioactive lipid mediators act as chemoattractants for monocytes, impair endothelial function, disrupt plasma membranes, and induce apoptosis in smooth muscle cells and macrophages. Lp-PLA_2 is produced and secreted by monocytes, macrophages, T-lymphocytes, and liver cells. Expression is dependent on leukocyte activation and is upregulated in macrophages within atherosclerotic plaques. The majority of circulating Lp-PLA_2 is found bound to LDL. As Lp-PLA_2 levels reflect the circulating lipoprotein profile, the state of leukocytes, and the inflammatory composition of the atherosclerotic plaque, it can be used as a prognostic indicator for cardiovascular outcomes.[3,4] On the other hand, in its role as PAF-AH, this enzyme inactivates the pro-inflammatory mediator PAF. Also, because Lp-PLA_2 removes the "lipid whiskers" that make oxLDL identifiable to scavenger receptors, Lp-PLA_2 may revert oxLDL to normal LDL when oxidative stress is relatively low.[5] In this scenario, Lp-PLA_2 essentially serves to prevent or delay the conversion of LDL to oxLDL, reducing endocytosis *via* scavenger receptors.

Additional information regarding ROS, oxLDL and oxPL, particularly in the context of atherosclerosis, are available in recent reviews.[6-8]

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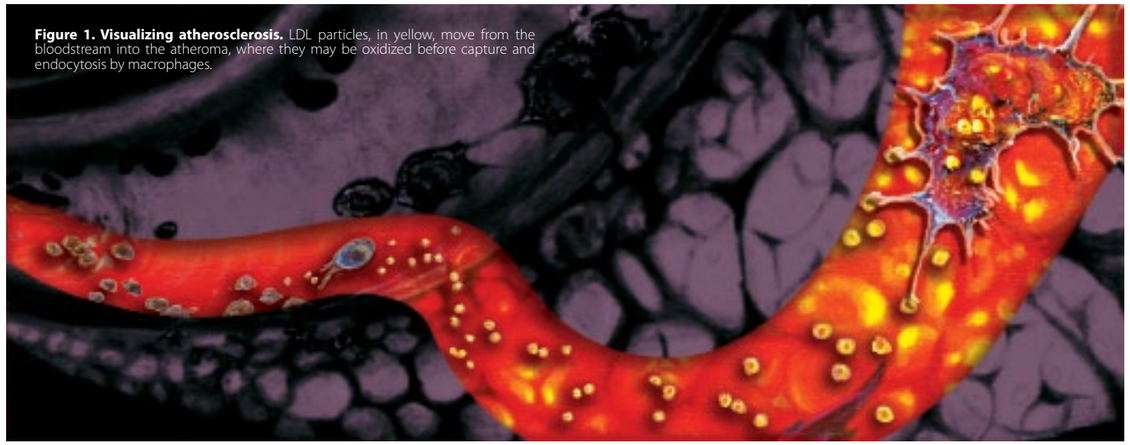


Figure 1. Visualizing atherosclerosis. LDL particles, in yellow, move from the bloodstream into the atheroma, where they may be oxidized before capture and endocytosis by macrophages.

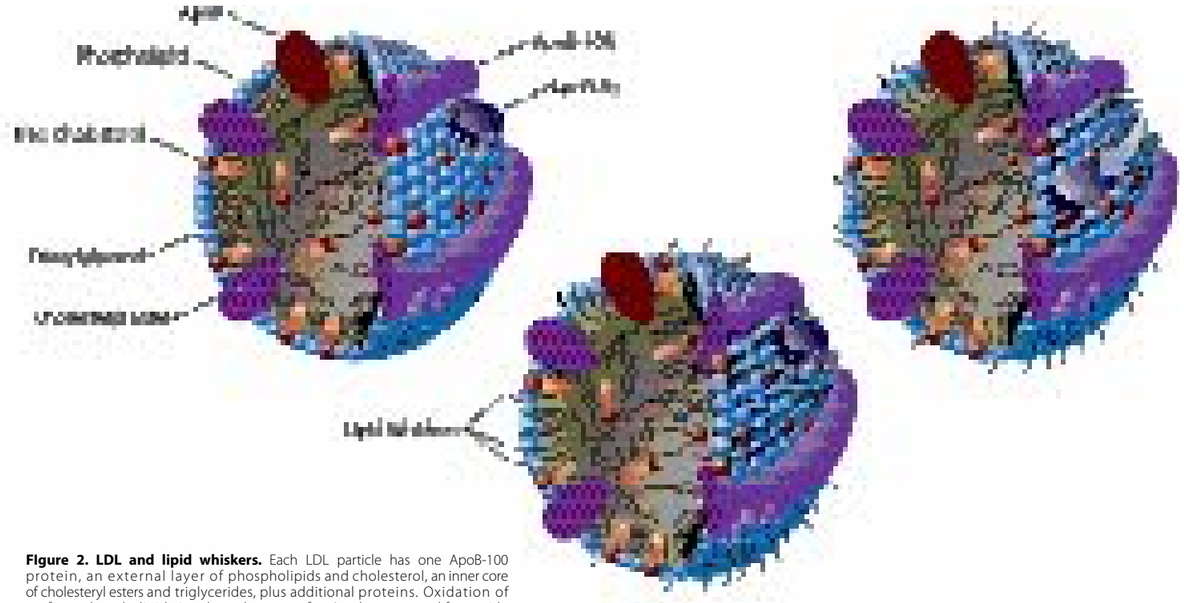


FIgure 2. LDL and lipid whiskers. Each LDL particle has one ApoB-100 protein, an external layer of phospholipids and cholesterol, an inner core of cholesteryl esters and triglycerides, plus additional proteins. Oxidation of surface phospholipids involves cleavage of *sn*-2 polyunsaturated fatty acids. The shortened, oxygenated fatty acid, being hydrophilic, moves to the LDL surface, forming a lipid whisker. These whiskers, which are recognized by scavenger receptors and mediate internalization of oxLDL, are removed by Lp-PLA_2, yielding lysophospholipid, released carboxylic acid-aldehyde/ketone whiskers, and a "shaved" LDL particle.

Apolipoproteins

Apolipoprotein	Associates with:	Notes
ApoA1*	HDL, primary apolipoprotein in HDL	Interacts with ABCA1 and stimulates cholesterol efflux from tissues to liver; LCAT co-factor and activator; interacts with ApoA1 binding protein; palmitoylated; deficiency leads to HDL deficiencies (e.g., Tangier disease) and systemic non-neuropathic amyloidosis; 28.3 kDa
ApoA-II	HDL>chylomicron	Homodimer; disulfide-linked; also forms a disulfide-linked heterodimer with ApoD; enhances hepatic lipase activity; deficiency may lead to hypercholesterolemia; 8.7 kDa
ApoA-IV*	HDL>chylomicron	Role unknown, perhaps intestinal lipid absorption; synthesized in the intestine and secreted in plasma; activates LCAT *in vitro*; 45.4 kDa (unprocessed precursor)
ApoA-V*	HDL, VLDL	Minor; stimulates ApoC-II-LPL hydrolysis of TG; PPARα regulated expression; 41.2 kDa (unprocessed precursor)
ApoB-48	chylomicron	Main apolipoprotein of chylomicrons; synthesized in gut; binds LDLR; derived from same gene as ApoB-100 through alternative splicing; 240 kDa (48% of ApoA-100 size)
ApoB-100	VLDL, IDL, LDL, primary apolipoprotein in LDL	Main apolipoprotein of LDL; synthesized in liver; lacks a binding domain for LDLR, so poorly cleared by LDLR, binding better with LDLR-related proteins (LRP); ApoB-100 levels correlate well with risk for coronary heart disease; deficiency associated with familial hypobetalipoproteinemia; palmitoylated; 510 kDa
ApoC-I	VLDL, HDL, chylomicron	Activates LCAT; inhibits CTEP; can inhibit hepatic lipase; 7.0 kDa
ApoC-II	VLDL, HDL, chylomicron	Co-factor for LPL; associates with ApoC-III and ApoE on nascent chylomicron to form mature chylomicron; 8.8 kDa
ApoC-III*	VLDL, IDL, HDL, chylomicron	Inhibits LPL and hepatic lipase *in vitro*; may delay catabolism of triglyceride-rich particles; high ApoC-III levels leads to hypertriglyceridemia and increased risk for atherosclerosis; 8.8 kDa
ApoC-IV		Little information available
ApoD	HDL, VLDL	Homologous to plasma retinol-binding protein, lipocalins; homodimer; dimerizes with ApoA-II; associated with LCAT; glycoprotein; 21.3 kDa (unprocessed precursor)
ApoE*	VLDL, IDL, LDL, HDL, chylomicron	Binds to LDLR; essential for normal catabolism of TG-rich lipoprotein constituents; ApoE deficiency leads to impaired clearance of chylomicron, VLDL, and IDL remnants, resulting in increased plasma cholesterol and TGs; may also be relevant to Alzheimer's disease, immunoregulation, and cognition; glycated; 34.1 kDa
ApoH	chylomicron	Binds negatively charged species, including heparin, phospholipids, and dextran sulfate; may be involved in lipoprotein metabolism, coagulation, and the production of antiphospholipid autoantibodies; also known as β_2 glycoprotein 1; 38.3 kDa (unprocessed precursor)

*AI, C-III, A-IV, and A-V genes are clustered on one chromosome (11 in humans); AI and A-IV genes are transcribed from the same strand; the A1 and C-III genes are convergently transcribed.
Abbreviations: ABCA1, ATP binding cassette transporter 1; CTEP, cholesteryl ester transfer protein; HDL, high density lipoprotein; IDL, intermediate density lipoprotein; LCAT, lecithin:cholesterol acyltransferase; LDL, low density lipoprotein; LDLR, low density lipoprotein receptor; LPL, lipoprotein lipase; TG, triglyceride; VLDL, very low density lipoprotein.

Furegrelate (sodium salt) 70540

[85666-17-7] U-63557A

MF: $C_{15}H_{10}NO_3$ • Na **FW:** 275.2 **Purity:** ≥99%
A crystalline solid **Stability:** ≥2 years at -20°C
Summary: Furegrelate is a potent inhibitor of TX synthase with little effect on other enzymes essential for arachidonate metabolism. The IC_{50} value is 15 nM for human platelet TX synthase.

1 mg
5 mg
10 mg
50 mg

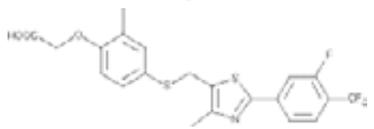
5-(3-pyridinylmethyl)-2-benzofurancarboxylic acid, sodium salt

NEW GW 0742 10006798

[317318-84-6]

MF: $C_{21}H_{17}F_4NO_3S_2$ **FW:** 471.5 **Purity:** ≥98%
A crystalline solid **Stability:** ≥2 years at -20°C
Summary: GW 0742 is a selective PPARd agonist (EC_{50} = 1.1 nM) that exhibits 1,000-fold selectivity over the other human PPAR subtypes.

5 mg
10 mg
25 mg
50 mg



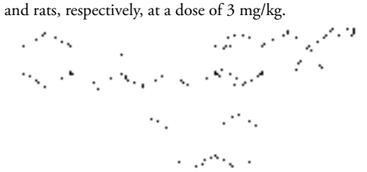
[4-[[[2-[3-fluoro-4-(trifluoromethyl)phenyl]-4-methyl-5-thiazolyl] methyl]thio]-2-methyl phenoxy]-acetic acid

NEW GW 7647 10008613

[265129-71-3]

MF: $C_{29}H_{46}N_2O_2S$ **FW:** 502.8 **Purity:** ≥98%
A crystalline solid **Stability:** ≥2 years at -20°C
Summary: GW 7647 is a potent, selective agonist of human and murine PPARa. It activates human PPARa, PPARg, and PPARd with EC_{50} values of 0.006, 1.1, and 6.2 µM, respectively, in a GAL4-PPAR binding assay. GW 7647 lowered TGs 93% and 60% in fat-fed hamsters and rats, respectively, at a dose of 3 mg/kg.

1 mg
5 mg
10 mg
25 mg



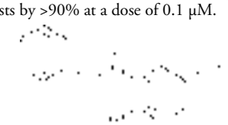
2-methyl-2-[[4-[2-[[(cyclohexylamino)carbonyl](4-cyclohexylbutyl)amino]ethyl]phenyl] thio]-propanoic acid

GW 9662 70785

[22978-25-2]

MF: $C_{13}H_9ClN_2O_3$ **FW:** 276.7 **Purity:** ≥98%
A crystalline solid **Stability:** ≥2 years at -20°C
Summary: GW 9662 is a potent PPARg antagonist. It blocks the PPARg-induced differentiation of monocytes to osteoclasts by >90% at a dose of 0.1 µM.

1 mg
5 mg
10 mg
50 mg



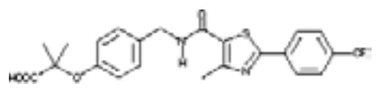
2-chloro-5-nitrobenzanilide

NEW GW 590735 10009880

[622402-22-6]

MF: $C_{23}H_{21}F_3N_2O_4S$ **FW:** 478.5 **Purity:** ≥98%
A crystalline solid **Stability:** ≥2 years at -20°C
Summary: Activation of PPARa results in increased clearance of TG-rich VLDL *via* a reduction in plasma levels of ApoC-III and in upregulation of ApoA1. GW 590735 is a potent and selective agonist of PPARa with an EC_{50} value of 4 nM for the expression of a GAL4-responsive reporter gene and at least 500-fold selectivity *versus* PPARg and PPARd.

1 mg
5 mg
10 mg
50 mg



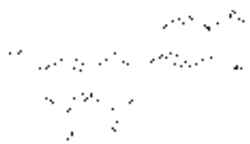
2-methyl-2-(4-((4-methyl-2-(4-(trifluoromethyl)phenyl)thiazole-5-carboxamido)methyl) phenoxy)propanoic acid

Hesperetin 10006084

[520-33-2]

MF: $C_{16}H_{14}O_6$ **FW:** 302.3 **Purity:** ≥98%
A crystalline solid **Stability:** ≥2 years at room temperature
Summary: Hesperetin is a citrus flavonoid that has been reported to lower plasma cholesterol. Hesperetin reduces the transcription of ACAT-2 mRNA in HepG2 cells and reduces ApoB protein synthesis in a dose-dependent manner. The EC_{50} value for these responses is approximately 50 µM. Hesperetin also inhibits histamine release from IgE-challenged RBL-2H3 cells, with a potency comparable to the commercial anti-allergy drug azelastine.

25 g
50 g
100 g
500 g



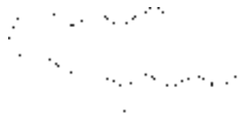
2,3-dihydro-5,7-dihydroxy-2S-(3-hydroxy-4-methoxyphenyl)-4H-1-benzopyran-4-one

12(S)-HHTrE 34590

[54397-84-1] 12-HHT

MF: $C_{17}H_{28}O_3$ **FW:** 280.4 **Purity:** ≥97%
A solution in ethanol **Stability:** ≥1 year at -20°C
Summary: 12(S)-HHTrE is an unusual product of the COX pathway and one of the primary arachidonic acid metabolites of the human platelet. It is biosynthesized by TX synthase from PGH_2 concurrently with TXA_2. The biological role of 12(S)-HHTrE is uncertain. It is avidly oxidized to 12-oxoHTrE by porcine 15-hydroxy PGDH.

25 µg
50 µg
100 µg
250 µg



12S-hydroxy-5Z,8E,10E-heptadecatrienoic acid

(±)9-HODE cholesteryl ester 38401

[33783-76-5]

MF: $C_{45}H_{76}O_3$ **FW:** 665.1 **Purity:** ≥98%
A solution in ethanol **Stability:** ≥1 year at -20°C
Summary: (±)9-HODE cholesteryl ester was originally extracted from atherosclerotic lesions and shown to be produced by Cu^{2+}-catalyzed oxidation of LDL. Later studies determined that 15-LO from rabbit reticulocytes and human monocytes were able to metabolize cholesteryl linoleate, a major component of LDL, to 9-HODE cholesteryl ester.

25 µg
50 µg
100 µg
250 µg

(±)-9-hydroxy-10E,12Z-octadecadienoic acid, cholesteryl ester

9(R)-HODE cholesteryl ester 38406

MF: $C_{45}H_{76}O_3$ **FW:** 665.1 **Purity:** ≥98%
A solution in ethanol **Stability:** ≥1 year at -20°C
Summary: 9(R)-HODE cholesteryl ester was originally extracted from atherosclerotic lesions. It remains uncertain whether the oxidized fatty acid portion of the molecule results from enzymatic lipoxygenation or from random lipid peroxidation. 9(R)-HODE cholesteryl ester can be used as a standard for analysis of chiral HODE cholesteryl esters.

25 µg
50 µg
100 µg
250 µg

9R-hydroxy-10E,12Z-octadecadienoic acid, cholesteryl ester

9(S)-HODE cholesteryl ester 38411

MF: $C_{45}H_{76}O_3$ **FW:** 665.1 **Purity:** ≥98%
A solution in ethanol **Stability:** ≥1 year at -20°C
Summary: 9(S)-HODE cholesteryl ester was originally extracted from atherosclerotic lesions. It remains uncertain whether the oxidized fatty acid portion of the molecule results from enzymatic lipoxygenation or from random lipid peroxidation. 9(S)-HODE cholesteryl ester can be used as a standard for analysis of chiral HODE cholesteryl esters.

25 µg
50 µg
100 µg
250 µg

9S-hydroxy-10E,12Z-octadecadienoic acid, cholesteryl ester

(±)13-HODE cholesteryl ester 38601

[167354-91-8]

MF: $C_{45}H_{76}O_3$ **FW:** 665.1 **Purity:** ≥98%
A solution in ethanol **Stability:** ≥1 year at -20°C
Summary: (±)13-HODE cholesteryl ester was originally extracted from atherosclerotic lesions and shown to be produced by Cu^{2+}-catalyzed oxidation of LDL. Later studies determined that 15-LO from rabbit reticulocytes and human monocytes were able to metabolize cholesteryl linoleate, a major component of LDL, to 13-HODE cholesteryl ester.

25 µg
50 µg
100 µg
500 µg

(±)-13-hydroxy-9Z,11E-octadecadienoic acid, cholesteryl ester

13(R)-HODE cholesteryl ester 38606

MF: $C_{45}H_{76}O_3$ **FW:** 665.1 **Purity:** ≥98%
A solution in ethanol **Stability:** ≥1 year at -20°C
Summary: 13(R)-HODE cholesteryl ester was originally extracted from atherosclerotic lesions. It remains uncertain whether the oxidized fatty acid portion of the molecule results from enzymatic lipoxygenation or from random lipid peroxidation. 13(R)-HODE cholesteryl ester can be used as a standard for analysis of chiral HODE cholesteryl esters.

25 µg
50 µg
100 µg
250 µg

13R-hydroxy-9Z,11E-octadecadienoic acid, cholesteryl ester

13(S)-HODE cholesteryl ester 38611

MF: $C_{45}H_{76}O_3$ **FW:** 665.1 **Purity:** ≥98%
A solution in ethanol **Stability:** ≥1 year at -20°C
Summary: 13(S)-HODE cholesteryl ester was originally extracted from atherosclerotic lesions. It remains uncertain whether the oxidized fatty acid portion of the molecule results from enzymatic lipoxygenation or from random lipid peroxidation. 13(S)-HODE cholesteryl ester can be used as a standard for analysis of chiral HODE cholesteryl esters.

25 µg
50 µg
100 µg
250 µg

13S-hydroxy-9Z,11E-octadecadienoic acid, cholesteryl ester

NEW Hormone Sensitive Lipase Polyclonal Antibody 10006371

HSL

Peptide affinity-purified IgG **Stability:** ≥1 year at -20°C
Summary: Antigen: synthetic peptide from human HSL amino acids 731-741 • Host: rabbit • Cross-reactivity: (+) human, ovine, murine, and rat HSL; other species not tested • Applications: WB and ICC; other applications not tested • HSL catalyzes the hydrolysis of tri-, di-, and monoacylglycerols, as well as cholesterol esters.

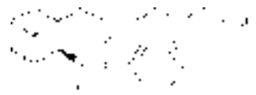
1 ea

Also Available: *Hormone Sensitive Lipase Blocking Peptide (10006372)* *200 µg*

I-SAP 19021

[133538-58-6] Iodophenyl sulfonyl amino pinane TXA_2
MF: $C_{22}H_{30}INO_4S$ **FW:** 531.4 **Purity:** ≥98%
A solution in ethanol **Stability:** ≥2 years at -20°C
Summary: I-SAP is a high affinity TP receptor antagonist. At physiologic pH, I-SAP produces platelet shape change, but not aggregation, with an EC_{50} value of 9.7 nM. I-SAP binds to human platelets with the maximum binding obtained between pH 6.5 and pH 7.4. In washed human platelets, the K_d value for I-SAP is 468 pM at pH 7.4 and 490 pM at pH 6.5.

100 µg
500 µg
1 mg
5 mg



[3S-[1α,2α,3β,5α]]-7-[3-[[(4-iodophenyl)sulfonyl]amino]-6,6-dimethylbicyclo[3.1.1]hept-2-yl]-5Z-heptenoic acid

Iloprost 18215

[78919-13-8] Ciloprost
MF: $C_{22}H_{32}O_4$ **FW:** 360.5 **Purity:** ≥97%
A solution in methyl acetate **Stability:** ≥1 year at -20°C
Summary: Iloprost is a second generation structural analog of prostacyclin (PGI_2) with about ten-fold greater potency than the first generation stable analogs, typified by carbaprostacyclin. Iloprost binds with equal affinity to the human recombinant IP and EP_1 receptors with a K_i value of 11 nM. Iloprost constricts the isolated guinea pig ilium and fundus circular smooth muscle (an EP_1 receptor preparation) as strongly as PGE_2 itself. Iloprost inhibits the ADP, thrombin, and collagen-induced aggregation of human platelets with an ED_{50} value of about 13 nM. In whole animals, iloprost acts as a vasodilator, hypotensive, antidiuretic, and prolongs bleeding time. It has been evaluated in several human clinical studies as a treatment for idiopathic pulmonary hypertension. In these studies, an aerosolized dose of 30 µg/day was effective, and doses as high as 150 µg/day for up to a year were well tolerated.

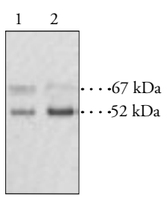
500 µg
1 mg
5 mg
10 mg

9S-hydroxy-10E,12Z-octadecadienoic acid, cholesteryl ester

NEW IP Receptor (human) Polyclonal Antibody 10005518

PGI_2 Receptor, Prostacyclin Receptor
Peptide affinity-purified IgG **Stability:** ≥1 year at -20°C
Summary: Antigen: human IP receptor N-terminal amino acids 1-16 • Host: rabbit • Cross-reactivity: (+) human, murine, and rat IP receptors; other species not tested • Application: WB; other applications not tested

1 ea



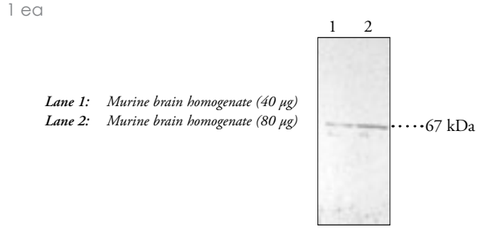
Lane 1: *Human platelet lysate (4 µg)*
Lane 2: *Human platelet lysate (8 µg)*

Also Available: *IP Receptor (human) Blocking Peptide (10005519) 200 µg*

NEW IP Receptor (murine) Polyclonal Antibody 160070

PGI_2 Receptor, Prostacyclin Receptor
Peptide affinity-purified IgG **Stability:** ≥2 years at -20°C
Summary: Antigen: murine IP receptor N-terminal amino acids 3-16 • Host: rabbit • Cross-reactivity: (+) murine and rat IP receptor; (-) human IP receptor; other species not tested • Application: WB; other applications not tested

1 ea



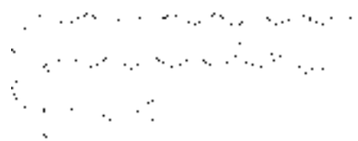
Lane 1: *Murine brain homogenate (40 µg)*
Lane 2: *Murine brain homogenate (80 µg)*

Also Available: *IP Receptor (murine) Blocking Peptide (360070) 200 µg*

KDdiA-PC 62935

[439904-34-4]
MF: $C_{36}H_{66}NO_{11}P$ **FW:** 719.9 **Purity:** ≥98%
A solution in ethanol **Stability:** ≥1 year at -20°C
Summary: oxLDL particles contain low molecular weight species which are cytotoxic and pro-atherogenic. Many of these substances have been isolated and purified from oxLDL and identified as phosphatidylcholine species containing a fragmented, oxidized short-chain fatty acid remnant at the *sn*-2 position. KDdiA-PC is one of the most potent CD36 ligands among the oxLDL species. KDdiA-PC confers CD36 scavenger receptor binding affinity to LDL at a frequency of only two to three KDdiA-PC molecules/LDL particle, and may be one of the more important structural determinants of oxLDL.

1 mg
5 mg
10 mg
50 mg

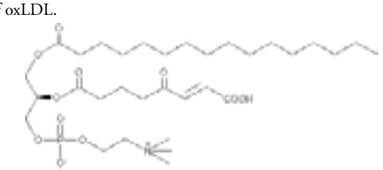


1-(palmitoyl)-2-(4-keto-dodec-3-ene-dioyl)phosphatidylcholine

KOdiA-PC 62945

[439904-33-3]
MF: $C_{32}H_{58}O_{11}P$ **FW:** 663.8 **Purity:** ≥98%
A solution in ethanol **Stability:** ≥1 year at -20°C
Summary: oxLDL particles contain low molecular weight species which are cytotoxic and pro-atherogenic. Many of these substances have been isolated and purified from oxLDL and identified as phosphatidylcholine species containing a fragmented, oxidized short-chain fatty acid remnant at the *sn*-2 position. KOdiA-PC, is one of the most potent CD36 ligands among the oxLDL species. KOdiA-PC confers CD36 scavenger receptor binding affinity to LDL at a frequency of only two to three KOdiA-PC molecules/LDL particle, and may be one of the more important structural determinants of oxLDL.

1 mg
5 mg
10 mg
50 mg

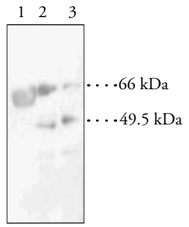


1-(palmitoyl)-2-(5-keto-6-octenedioyl) phosphatidylcholine

NEW LCAT Polyclonal Antibody 10009323

Lecithin:Cholesterol Acyltransferase, Phosphatidylcholine-Sterol O-Acyltransferase
Peptide affinity-purified IgG **Stability:** ≥1 year at -20°C
Summary: Antigen: human LCAT protein amino acids 132-143 • Host: rabbit • Cross-reactivity: (+) human, murine, porcine, and bovine LCAT • Application: WB • LCAT catalyzes the fatty acid transfer from the *sn*-2 position of phosphatidylcholine (lecithin) to cholesterol and to a lesser degree to other acceptor molecules. This enzyme is critical to the process of reverse cholesterol transport or movement of cholesterol esters into HDL particles from cells.

1 ea



Lane 1: *Human plasma (20 µg)*
Lane 2: *Human plasma minus albumin (10 µg)*
Lane 3: *Human plasma minus albumin (5 µg)*

Also Available: *LCAT Blocking Peptide (10009324) 200 µg*

NEW LDL-Dylight™ 549 10011229

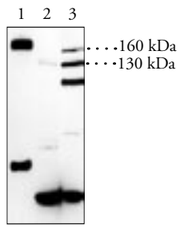
Summary: LDL uptake and its regulation are important therapeutic targets for atherosclerosis and related diseases. This preparation of LDL consists of human LDL conjugated to Dylight™ 549 as a fluorescent probe for detection of LDL uptake into cultured cells.

1 ea

NEW LDL Receptor Polyclonal Antibody 10007665

LDLR
Summary: Antigen: murine LDLR amino acids 499-511 • Host: rabbit • Cross-reactivity: (+) human, murine, and rat LDLRs • Applications: WB and ICC • The LDLRs are cell surface glycoproteins that scavenge LDL from the blood and regulate plasma LDL cholesterol.

1 ea



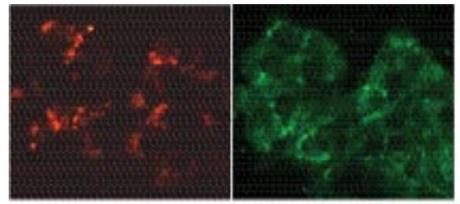
Lane 1: *Rat placenta homogenate (60 µg)*
Lane 2: *Murine liver homogenate (60 µg)*
Lane 3: *RAW 264.7 cell lysate (60 µg)*

Also Available: *LDL Receptor Blocking Peptide (10007672) 200 µg*

NEW LDL Uptake Cell-based Assay Kit 10011125

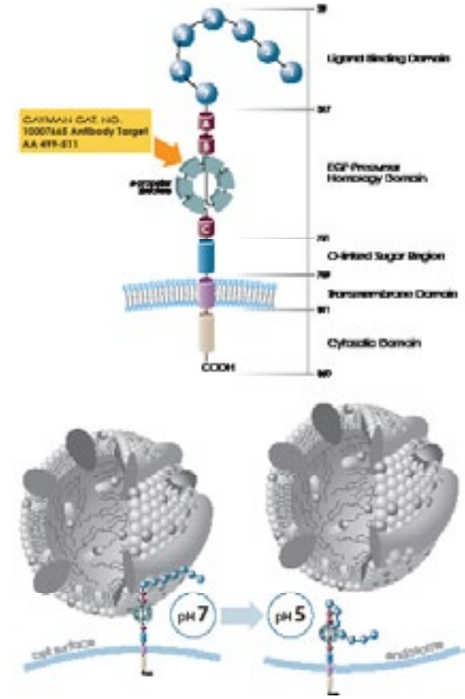
LDL uptake and its regulation are important therapeutic targets for atherosclerosis and related diseases. Cayman Chemical's LDL Cellular Uptake Assay Kit employs a preparation of human LDL conjugated to Dylight™ 549 as a fluorescent probe for detection of LDL uptake into cultured cells. A LDLR-specific antibody and a Dylight™ 488-conjugated secondary antibody are included in the kit for identifying the distribution of LDLRs. The kit provides a convenient tool for studying LDL uptake and its regulation at the cellular level.

1 ea



LDL Uptake in HepG2 cells: HepG2 cells were cultured at a density of 4×10^5 cell/well in a 96-well plate for two days and then treated with 32 µM EGCG overnight. LDL-Dylight™ 549 (10 µg/ml) was added and incubated for four hours. Cells were fixed and stained for LDL receptor using a rabbit anti-LDL receptor polyclonal and a goat anti-rabbit IgG Dylight™ 488-conjugated secondary antibody. **Left panel:** LDL-Dylight™ 549 taken into cells appear in red. **Right panel:** LDL receptors in green show a distribution pattern that matches cells in the left panel containing LDL Dylight™ 549.

LDLR and Model for Release of LDL in the Endosome

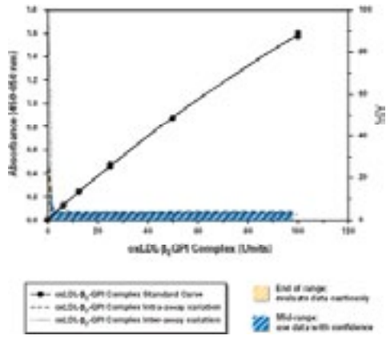


The LDL receptor has five functionally distinct regions. The N-terminal ligand binding repeats 3-7 can bind ApoB on LDL particles at neutral pH. At endosomal pH, LDL dissociates from the receptor as ligand binding repeats 4 and 5 engage in intramolecular contacts with the **b** propeller domain.

NEW oxLDL-b_2GPI (human) ELISA Kit 10007893

Oxidized low-density lipoprotein-b_2 Glycoprotein I (human)
Stability: ≥6 months at 4°C
Summary: oxLDL is the principal form of cholesterol that accumulates in atherosclerotic lesions or plaques. Unlike native LDL, oxLDL binds to b_2GPI to form oxLDL-b_2GPI complexes. Stable oxLDL-b_2GPI complexes are regarded as pathogenic and appear to be highly clinically relevant. Cayman's oxLDL-b_2GPI (human) ELISA is an immunometric (*i.e.,* sandwich) assay that detects the circulating oxLDL-b_2GPI complex in human serum or plasma. The wells of each 96-well plate are coated with a monoclonal antibody against human b_2GPI. Bound oxLDL-b_2GPI is detected using a horseradish peroxidase (HRP)-labeled monoclonal antibody directed against human ApoB-100. Results are calculated against a standard curve prepared from the Reference Solution provided in the kit.

96 wells



NEW Leukotriene A_4 Hydrolase (human recombinant) 10007817

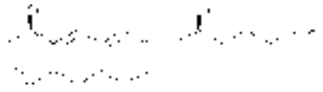
LTA_4H
Purity: ≥90%
A solution in 100 mM Tris **Stability:** ≥6 months at -80°C
Summary: Source: recombinant C-terminal His-tagged enzyme expressed in *E. coli* • M_r: ~69 kDa

25 µg
50 µg
100 µg

Leukotriene B_4 20110

[71160-24-2]
MF: $C_{20}H_{32}O_4$ **FW:** 336.5 **Purity:** ≥97%
A solution in ethanol **Stability:** ≥1 year at -20°C
Summary: LTB_4 is a dihydroxy fatty acid derived from arachidonic acid through the 5-LO pathway. It promotes a number of leukocyte functions including aggregation, stimulation of ion fluxes, enhancement of lysosomal enzyme release, superoxide anion production, chemotaxis, and chemokinesis. In subnanomolar ranges (3.9×10^{-10} M), LTB_4 causes chemotaxis and chemokinesis in human PMNL. At higher concentrations (1.0×10^{-7} M), LTB_4 leads to neutrophil aggregation and degranulation as well as superoxide anion production.

25 µg
50 µg
100 µg
500 µg

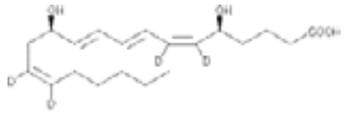


5S,12R-dihydroxy-6Z,8E,10E,14Z-eicosatetraenoic acid

Leukotriene B_4-d_4 320110

MF: $C_{20}H_{28}D_4O_4$ **FW:** 340.5 **Chemical Purity:** ≥97%
Deuterium Incorporation: ≤1% d_0
A solution in acetonitrile **Stability:** ≥1 year at -20°C
Summary: LTB_4-d_4 contains four deuterium atoms at the 6, 7, 14, and 15 positions. It is intended for use as an internal standard for the quantification of LTB_4 by GC- or LC-MS.

25 µg
50 µg
100 µg
500 µg



5S,12R-dihydroxy-6Z,8E,10E,14Z-eicosatetraenoic-6,7,14,15-d_4 acid

Leukotriene B_4 EIA Kit 520111

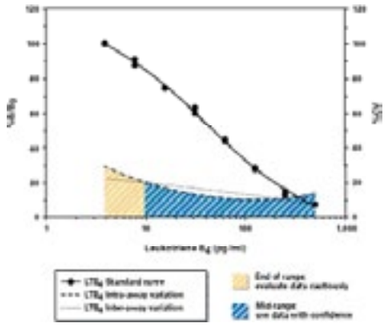
Stability: ≥6 months at -20°C
Summary: LTB_4 is synthesized from arachidonic acid by the combined action of 5-LO and LTA_4 hydrolase. LTB_4 has long been recognized as a potent mediator of inflammation. It stimulates a number of leukocyte functions, including aggregation, stimulation of ion fluxes, enhancement of lysosomal enzyme release, superoxide anion production, chemotaxis, and chemokinesis. In subnanomolar ranges (3.9×10^{-10} M), LTB_4 causes chemotaxis and chemokinesis in human PMNL. At higher concentrations (1.0×10^{-7} M), LTB_4 leads to neutrophil aggregation and degranulation as well as superoxide anion production. Plasma levels of LTB_4 increase from <100 pg/ml to >100 ng/ml following leukocyte stimulation. LTB_4 is metabolized in leukocytes and hepatocytes to less active 20-hydroxy and 20-carboxy LTB_4 by NADPH-dependent cytochrome P450 enzymes followed by b-oxidation at the w-end to w-carboxy dinor LTB_4 and w-carboxy tetranor LTB_3. LTB_4 is not excreted in the urine.

Sensitivity: 50% B/B_0: 50 pg/ml
80% B/B_0: 13 pg/ml
Specificity:

Leukotriene B_4	100%
5(S)-HETE	6.6%
5(R)-HETE	3.7%
20-hydroxy Leukotriene B_4	2.7%
15(R)-HETE	0.98%
15(S)-HETE	0.4%
6-*trans*-12-*epi* Leukotriene B_4	0.31%
6-*trans* Leukotriene B_4	0.11%
5,6-DiHETE	0.07%
Glutathione	<0.01%
20-carboxy Leukotriene B_4	<0.01%
Leukotriene C_4	<0.01%
Leukotriene D_4	<0.01%
Leukotriene E_4	<0.01%
19(R)-hydroxy Prostaglandin B_2	<0.01%

96 wells
480 wells

Also Available: Leukotriene B_4 EIA Kit (Solid Plate) (520111.1)



Leukotriene E_4 EIA Kit 520411

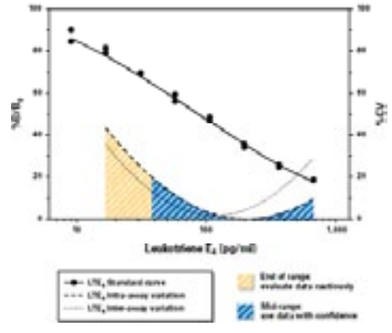
Stability: ≥6 months at -80°C
Summary: LTE_4 is a product of the 5-LO pathway in activated mast cells, eosinophils, and monocytes. LTA_4, the primary 5-LO metabolite, is converted to LTC_4 and sequentially to LTD_4 and LTE_4 in the host cell, or by transcellular metabolism in erythrocytes, platelets, or neutrophils. This metabolism is rapid and complete, in that plasma levels of LTC_4 are virtually undetectable. Exogenously administered LTC_4 is recovered in the urine as LTE_4 (5-13%) and two prominent oxidized metabolites resulting from several cycles of b-oxidation. Plasma LTE_4 levels are <2 pg/ml as a consequence of the low rate of production and rapid elimination. Normal human urine contains low but detectable amounts of LTE_4, ranging from 10-60 pg/ml. Asthmatic patients in an acute episode of bronchoconstriction may have elevations of urinary LTE_4 to several hundred pg/ml, but their baseline LTE_4 levels are not consistently abnormal.

Sensitivity: 50% B/B_0: 125 pg/ml
80% B/B_0: 30 pg/ml
Specificity:

Leukotriene E_4	100%
Leukotriene E_5	100%
N-acetyl Leukotriene E_4	20%
Leukotriene C_4	10%
Leukotriene D_4	7%
11-*trans* Leukotriene E_4	6.6%
Leukotriene C_5	2%
Arachidonic Acid	<0.01%
Leukotriene B_4	<0.01%
Leukotriene B_5	<0.01%
Leukotriene D_5	<0.01%
tetranor-PGEM	<0.01%
tetranor-PGFM	<0.01%

96 wells
480 wells

Also Available: *Leukotriene E_4 EIA Kit (Solid Plate) (520411.1)*



Linolein Hydroperoxides 89430

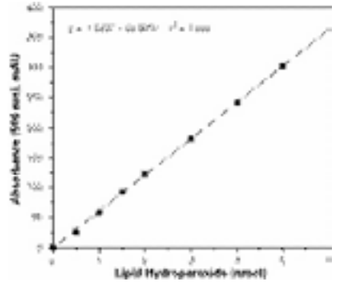
Purity: ≥98% (A mixture of 132 isomers)
A solution in ethanol **Stability:** ≥2 years at -80°C
Summary: Linolein hydroperoxides are a mixture of 132 possible isomers of mono-, di-, and tri-hydroperoxides produced from the autoxidation of trilinolein. Autoxidation of linoleic acid-containing TGs (for example, trilinolein) *in vivo* could result in the formation of these hydroperoxides. Unlike the free fatty acid hydroperoxides of linoleic acid (for example, 13-HpODE), linolein hydroperoxides are not readily reduced in human plasma *in vitro*. Circulating linolein hydroperoxides could contribute to the pathophysiology of atherosclerosis.

500 µg
1 mg
5 mg
50 mg

Lipid Hydroperoxide (LPO) Assay Kit 705002

Stability: ≥1 year at 4°C
Summary: Quantification of lipid peroxidation is essential to assess the role of oxidative injury in pathophysiological disorders. Lipid peroxidation results in the formation of highly reactive and unstable hydroperoxides of both saturated and unsaturated lipids. Our Lipid Hydroperoxide Assay Kit measures hydroperoxides directly utilizing redox reactions with ferrous ions. An easy to use quantitative extraction method was developed to extract lipid hydroperoxides into chloroform, and the extract is directly used in the assay. This procedure eliminates any interference caused by hydrogen peroxide or endogenous ferric ions in the sample and provides a sensitive and reliable assay for lipid peroxidation. This kit is designed for use with either a single-tube spectrophotometer to read the results or with a 96-well microplate reader. The plate used with the microplate reader is a reusable glass plate which is available with the purchase of Catalog No. 705003. The range of the assay is 0.25-5 nmol hydroperoxide per tube.

100 dtn



Also Available: *Lipid Hydroperoxide (LPO) Assay Kit (96 well) (705003)* *96 wells*

5-Lipoxygenase (human recombinant) 60402

MF: Monomer **FW:** 78 kDa **Purity:** 16,000 x g supernatant
A solution in 100 mM Tris , pH 8.0, containing 2 mM EGTA
Stability: ≥6 months at -80°C
Summary: EC 1.13.11.34 • Recombinant enzyme isolated from a Baculovirus overexpression system in Sf21 cells • Avoid repeated thawing and refreezing • One unit of enzyme consumes one nmol of oxygen per minute at 25°C in 50 mM Tris-HCl buffer, pH 7.5, containing 100 µM arachidonate, 2 mM $CaCl_2$, and 1 mM ATP

500 units
1 Kunit
2.5 Kunit
5 Kunit

NEW 5-Lipoxygenase (Phospho-Ser[523]) Polyclonal Antibody 10007820

Affinity-purified rabbit polyclonal antibody **Stability:** ≥1 year at -20°C
Summary: Antigen: phosphopeptide corresponding to amino acid residues surrounding the phospho-Ser[523] of human 5-LO • Host: rabbit • Cross-reactivity: (+) human, rat, and non-human primate 5-LO • Application: WB

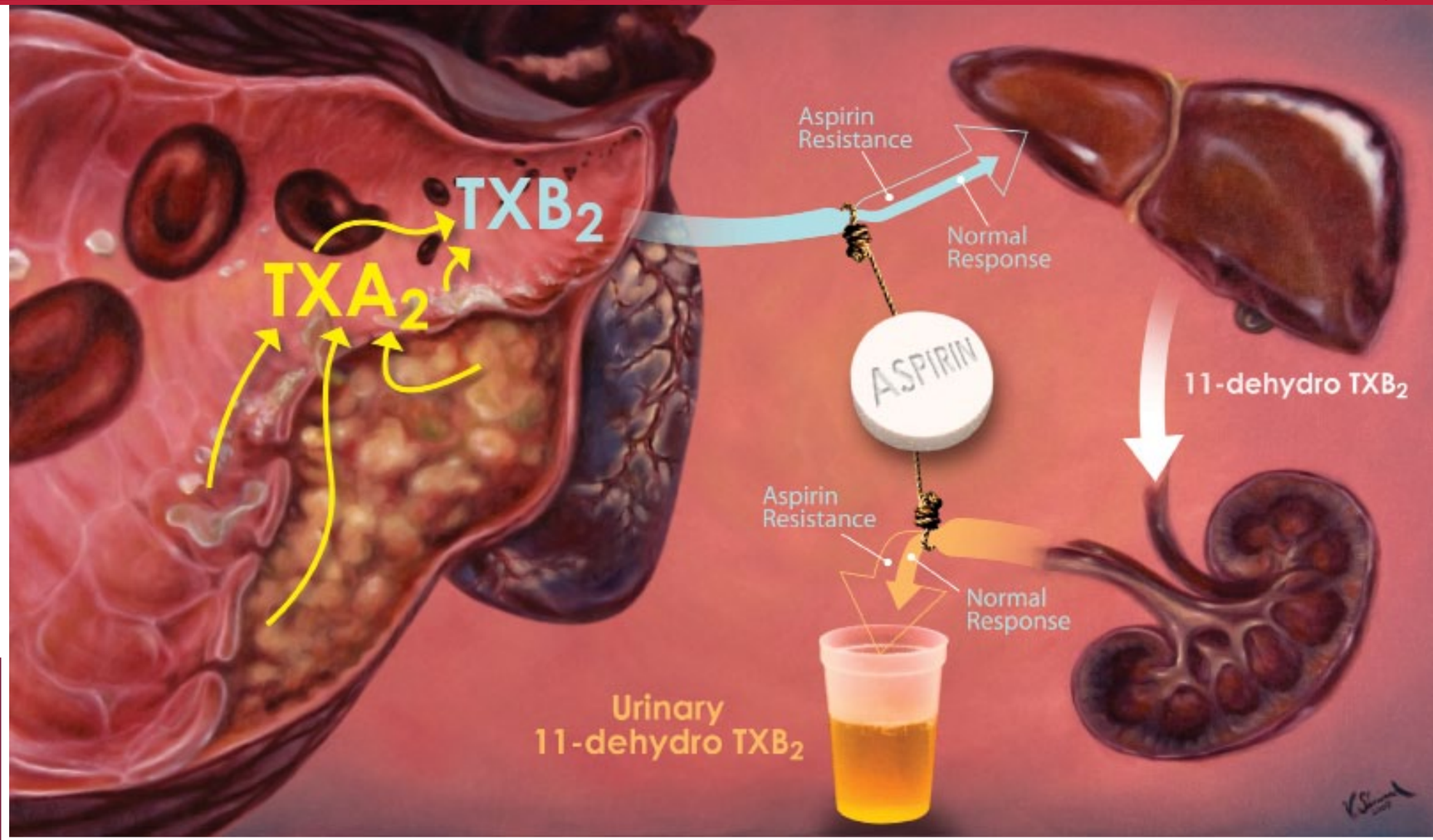
100 µl

FDA Approved - 510(k) CEMark

High Risk Atherosclerosis

When Aspirin no longer works

Aspirin Effect-Detection Kit



Millions of Americans ingest a daily 'minidose' (80 mg) of aspirin as a means of selectively inhibiting platelet cyclooxygenase-1 (COX-1) and subsequent production of TXA_2. Recent studies indicate that a subpopulation of these users do not achieve the desired level of inhibition of TXA_2, as determined by its more stable metabolites. The Cayman Aspirin Effect-Detection Kit is a 510(k), clinically-approved diagnostic kit for the measurement of 11-dehydro TXB_2. It is intended to help physicians assess the effectiveness of their patients' aspirin regime, and to help identify the high-risk group who are inadequately controlled on an 80 mg aspirin dose.

Thromboxane A_2 (TXA_2) is produced from arachidonic acid by many cells and causes irreversible platelet aggregation and vascular and bronchial smooth muscle contraction.[1-3] TXA_2 is rapidly hydrolyzed non-enzymatically to form TXB_2. Although it is common to estimate TXA_2 levels by measuring TXB_2, most of the TXB_2 measured is due to *ex vivo* platelet activation or intra-renal production.[4] Measurement errors are compounded by the fact that normal concentrations of circulating TXB_2 are extremely low (1-2 pg/ml), and highly transient ($t_{1/2}$ = 5-7 minutes).[5,6] To circumvent this problem, it is necessary to measure a metabolite that cannot be formed by platelets or by the kidney. TXB_2 may be metabolized by 11-hydroxy TX dehydrogenase to form 11-dehydro TXB_2, or by β-oxidation to form 2,3-dinor TXB_2.[7] Infusion studies using TXB_2 have shown that both metabolites are formed equally, although 11-dehydro TXB_2 has a longer circulating half-life ($t_{1/2}$ = 45 minutes).[6,8] Therefore, measurement of 11-dehydro TXB_2 in plasma or urine will give a time-integrated indication of TXA_2 production.

Current methods for detecting aspirin resistance include a number of blood-based assays that measure *in vitro* platelet aggregation. However, these methods are not quantitative and can be affected by factors that are unrelated to aspirin sensitivity. In order to more quickly and accurately detect aspirin resistance in at-risk patients, we have developed a rapid, quantitative competitive immunoassay for 11-dehydro TXB_2 using a monoclonal antibody. This new assay can be completed in three hours and utilizes urine as the sample matrix. The assay exhibits intra-assay %CV values of <11% with sensitivity sufficient to detect the lower levels of 11-dehydro TXB_2 in patients that respond well to aspirin. This patented monoclonal ELISA for 11-dehydro TXB_2 detection combines the speed of the blood-based assays with the sensitivity and quantitation of the ELISA.

References

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8. Ciabattoni, G., Pugliese, F., Davi, G., *et al. Biochim. Biophys. Acta* **992,** 66-70 (1989).

Developed in cooperation by: **Cayman Chemical, Corgenix, and Creative Clinical Concepts**

NEW **Aspirin Effect-Detection Kit - FDA Approved - 510(k) CEMark** **10010153**

Stability: ≥1 year at 4°C

About the Assay: Cayman's Aspirin-effect Detection Kit provides a highly sensitive urine-based monoclonal ELISA for detection of both 11-dehydro TXB_2 and 11-dehydro-2,3 dinor TXB_2. The detection of multiple TXA_2 metabolites provides additional sensitivity and reproducibility as compared to assays that detect only one metabolite, *i.e.*, 11-dehydro TXB_2.

Limit of Detection: 222 pg/ml

Specificity:

11-dehydro-2,3-dinor Thromoboxane B_2	166%
11-dehydro Thromoboxane B_2	100%
2,3-dinor Thromoboxane B_2	1.90%
Prostaglandin D_2	0.20%
Thromoboxane B_2	0.05%
PGEM	<0.01%
PGFM	<0.01%
6-keto Prostaglandin$_{1a}$	<0.01%

1 ea

Tom Brock, Ph.D.

Inflammation in Atherosclerosis

Macrophage Functions

Macrophages are highly active and mobile cells that function at multiple levels within the innate immune system. Derived from circulating monocytes, macrophages police the intimal and medial layers below the endothelium of vessels, capturing pathogens, dead cells, and cellular debris. When necessary, they emit an array of chemical messengers to the cells around them to orchestrate changes as part of an immune response. Macrophages are central to vascular inflammation and their role in atherosclerosis was recently reviewed in detail.[1]

In healthy individuals, there are few, scattered resident macrophages in all tissues. Part of their function is to maintain sterility in their immediate region by migrating through the tissue and ingesting and killing pathogens. Macrophages are uniquely designed to capture pathogens because their surfaces bristle with receptors that specifically detect, bind, and internalize those targets. Macrophages also are coated with receptors to capture and ingest dead cells and a wide array of cellular debris that they find in their vicinity. Relevant to atherosclerosis, macrophages have specific receptors to identify normal and modified (oxidized, acetylated) lipoprotein particles. These include LDL receptors as well as several scavenger receptors, such as SR-A (or macrophage scavenger receptor 1), CD36 (or fatty acid translocase), and SR-PSOX (or CXCL16).

The two major macrophage classes are the M1 macrophages that drive killer T-cell activation *via* IL-12, and the M2 macrophages that secrete IL-10 and promote a general inflammatory response. Pro-inflammatory M2 macrophages in the vascular smooth muscle bind and transduce signals from oxLDL and thus differ from those in adipose tissue or hepatic tissue. As these macrophages ingest oxLDL to become the lipid-rich foam cells characteristic of atherosclerosis, their molecular signature changes further. Foam cells differ markedly from normal resident macrophages in healthy vessels in that foam cells are less mobile and secrete more inflammatory mediators than normal macrophages. In addition, a recent study indicates that foam cells may functionally mimic dendritic cells in their ability to present antigens and support an immune response.[2] Also, macrophages that differentiate into foam cells in the presence of insulin and glucose differ further, suggesting that these cells may contribute to the development of insulin resistance.[3]

Lipid accumulation, and also macrophage differentiation, is not necessarily unidirectional. Macrophages can export cholesterol, secreting it through ATP-binding cassette transporters such as ABCA1, donating cholesterol to ApoA1 to form HDL. It appears that the rate of cholesterol export is dependent on the amount of ApoA1. As a result, if there is sufficient ApoA1, macrophages can offset the influx of cholesterol from LDL captured by scavenger receptors and have a net loss of cellular cholesterol. This is important because accumulation of cellular cholesterol eventually leads to the secretion of monocyte chemoattractants, like MCP-1, which increases tissue monocyte/macrophage numbers and allows further lipid accumulation. Increasing ApoA1 (and HDL), then, is anti-inflammatory, reducing lipid accumulation as well as keeping the number of lipid-accumulating cells low.

References

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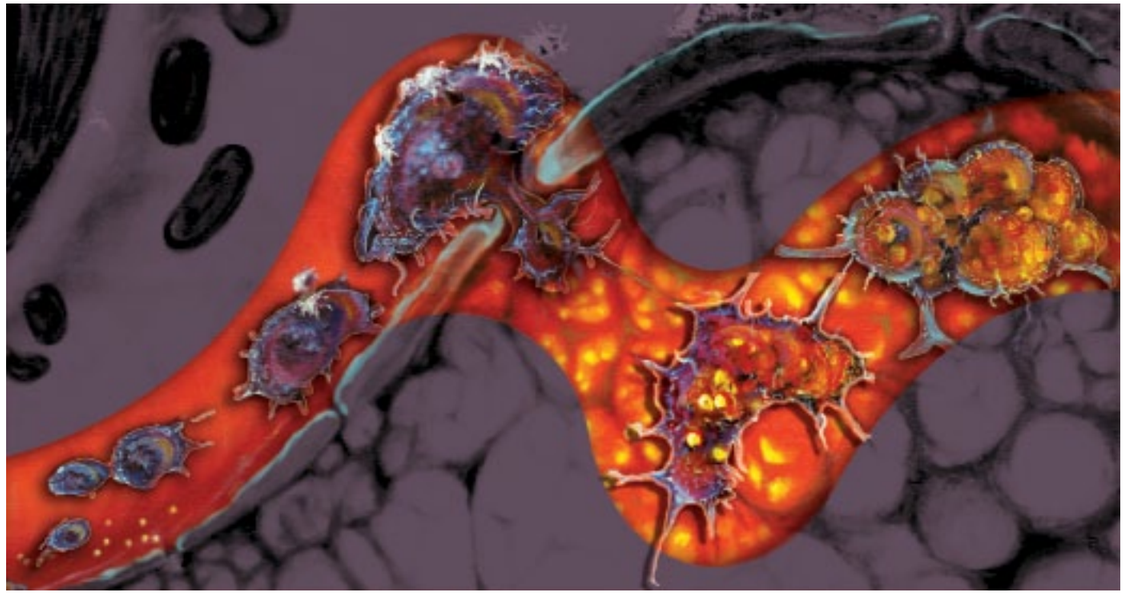


Figure 1. Macrophages as Middlemen in Atherosclerosis. Macrophages absorb LDL and oxLDL, accumulating cholesterol and becoming foam cells. Macrophages also initiate reverse cholesterol transport, donating cholesterol to ApoA1 to form HDL. Also, macrophages secrete numerous mediators, including ROS, leukotrienes, prostaglandins, and cytokines.

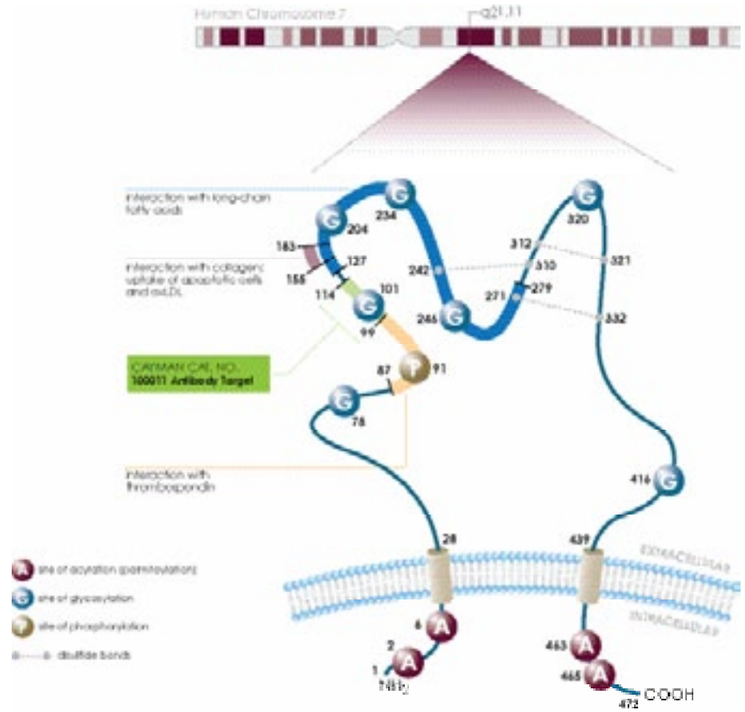


Figure 2. Predicted structure of CD36, receptor for oxLDL, oxidized phospholipids, long chain fatty acids, thrombospondin, and collagen type I.

Scavenger Receptors

Receptor	Ligands	Function in Atherosclerosis	Notes
SR-A, SCARA1, MSR1	acLDL, oxLDL,	Captures modified LDL and accumulates lipids in macrophages in arterial wall	*aka* CD204, phSR1, phSR2; three different types (1, 2, 3) generated by alternative splicing; macrophage-specific trimeric integral membrane; induced by high glucose, oxidative stress, IL-6, or PAF
MARCO, SCARA2	Gram negative and gram positive bacteria	unclear	Induced by oxidative stress, depletes reactive oxygen species
SCARA3	unclear	unclear	*aka* CSR, APC7, CSR1, MSLR1, MSRL1; induced by oxidative stress, depletes reactive oxygen species
SR-BI, CLA1	ApoA1, HDL, normal LDL, oxLDL, serum amyloid A	Capture HDL for cholesterol removal by hepatocyes	*aka* CD36L1; MGC138242; serum amyloid A decreases HDL cholesterol metabolism by competing for SR-B1; SR-B1 is essential for infection with hepatitis C virus; involved in cholesterol efflux from vessel wall, as well cholesterol uptake by liver
SR-BII	unclear	unclear	*aka* CD36L2, HLGP85, LIMPII; glycoprotein located primarily in limiting membranes of lysosomes and endosomes, involved in cell membrane transport processes
CD36, fatty acid translocase (FAT), thrombospondin receptor	oxLDL, oxidized phospholipids, long chain fatty acids, thrombospondin, collagen type I	Captures modified LDL and accumulates lipids in macrophages in arterial wall	*aka* GP4, GP3B, GPIV, CHDS7, PASIV, SCARB3; expression up-regulated by oxLDL or resistin, and in type II diabetes mellitus; serves as thrombospondin receptor on platelets; may function as a cell adhesion molecule
SR-PSOX	oxLDL,phosphatidylserine, CXCR6/Bonzo	Captures modified LDL and accumulates lipids in macrophages in arterial wall	*aka* SCY B16, CXCL16; induces a strong chemotactic response in macrophages; also exists as a soluble form; expressed in spleen, lymph nodes, lung, kidney, small intestine, and thymus
SCARF1	acLDL	Captures modified LDL	*aka* SREC-I, scavenger receptor expressed by endothelial cells; found on endothelial cells
SCARF2	unclear	Adhesion	*aka* Scavenger receptor expressed by endothelial cells 2 protein, SREC-II, SRECRP-1; probable adhesion protein; poorly binds acLDL; interacts with SCARF1

Abbreviations: SR, scavenger receptor; MSR1, macrophage scavenger receptor 1; SCARA, scavenger receptor A; acLDL, acetylated LDL; oxLDL, oxidized LDL; PAF, platelet-activating factor; MARCO, macrophage receptor with collagenous structure; CLA1, CD36 antigen-like 1

5-Lipoxygenase Polyclonal Antibody 160402

A solution of antiserum containing BSA and 0.02% sodium azide
Stability: ≥2 years at -20°C
Summary: Antigen: human and rat 5-LO amino acids 130-149; The sequence is 95% homologous to 5-LO from mouse and hamster • Host: rabbit • Cross-reactivity: (+) human, rat, murine, hamster, and porcine 5-LO; (-) 12-LO and 15-LO • Applications: WB, ICC, and IHC • 5-LO catalyzes the formation of 5(S)-HpETE from arachidonic acid as well as its subsequent conversion to LTA_4.

1 ea

Lane 1: *Porcine leukocyte 100,000 x g supernatant*

Also Available: *5-Lipoxygenase Blocking Peptide (360402)* *200 µg*

12-Lipoxygenase (murine leukocyte) Polyclonal Antiserum 160304

100 µl lyophilized antiserum **Stability:** ≥2 years at -20°C
Summary: Antigen: recombinant murine leukocyte 12-LO • Host: rabbit • Cross-reactivity: (+) murine, porcine, and human leukocyte 12-LO and rabbit reticulocyte 15-LO; other species not tested • Application: WB; other applications not tested

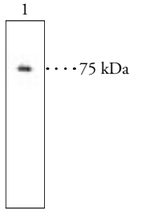
1 ea

Lane 1: *Human platelet lysate*
Lane 2: *Porcine leukocyte 100,000 x g supernatant*

15-Lipoxygenase-1 (rabbit) Polyclonal Antiserum 160704

50 µl lyophilized antiserum **Stability:** ≥3 years at -20°C
Summary: Antigen: rabbit reticulocyte 15-LO • Host: sheep • Cross-reactivity: (+) rabbit, human, and murine 15-LO-1 and 12-LO (porcine leukocyte) • Application: WB; other applications not tested • 15-LO-1 catalyzes the formation of 15(S)-HETE and 13(S)-HODE from arachidonic acid and linoleic acid, respectively.

1 ea

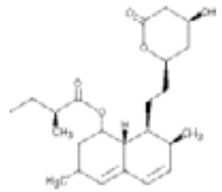


Lane 1: *Rabbit reticulocyte 15-LO-1 (60 ng)*

Lovastatin 10010338

[75330-75-5]
MF: $C_{24}H_{36}O_5$ **FW:** 404.5 **Purity:** ≥ 98%
A crystalline solid **Stability:** ≥2 years at -20°C
Summary: Lovastatin is a HMG-CoA reductase inhibitor that was initially isolated from *Aspergillus terreus*. It is a competitive inhibitor of HMG-CoA reductase with a K_i value of 0.6 nM for the open ring, hydroxyacid form of the molecule.

5 mg
10 mg
50 mg
100 mg



Also Available: *Lovastatin (sodium salt) (10010339)*

1 mg
5 mg
10 mg
50 mg

NEW LXRb Transcription Factor Assay Kit 10011119

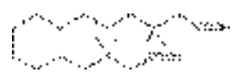
Liver X receptor
LXRs are ligand-activated transcription factors that are primarily activated by oxysterols and cholesterol metabolites. As such, LXRs play an important role in the regulation of cholesterol, lipid, and carbohydrate metabolism. There are two known isoforms of LXR: LXRa and LXRb. LXRb is ubiquitously expressed in all tissues while LXRa is primarily expressed in the liver, adipose tissue, small intestine, and macrophages. LXRs are currently being examined as potential therapeutic targets in the treatment of diabetes, cardiovascular disease, Alzheimers disease, obesity, and atherosclerosis. Cayman Chemical's LXRb Transcription Factor Assay is a sensitive colorimetric method for detecting specific transcription factor binding activity from nuclear exctracts and whole cell lysates in a 96-well format.

96 wells

MEDICA 16 90290

[87272-20-6]
MF: $C_{20}H_{38}O_4$ **FW:** 342.5 **Purity:** ≥98%
A crystalline solid **Stability:** ≥1 year at -20°C
Summary: MEDICA 16 is a b,b'-dimethyl hexadecanedioic acid that exhibits hypolipidemic and antidiabetogenic effects in the rat. In animals that were fed a diet which was 0.25% MEDICA 16 by weight, the hypolipidemic effect consisted of a 70-80% decrease in plasma chylomicrons and VLDL-triacylglycerols as well as a 40-60% decrease in plasma VLDL-cholestrol.

1 mg
5 mg
10 mg
50 mg

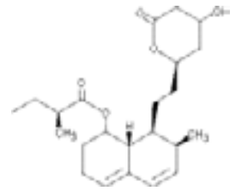


3,3,14,14-tetramethylhexadecanedioic acid

NEW Mevastatin 10010340

[75573-88-3]
MF: $C_{23}H_{34}O_5$ **FW:** 390.5 **Purity:** ≥98%
A crystalline solid **Stability:** ≥2 years at -20°C
Summary: Mevastatin is a HMG-CoA reductase inhibitor that was initially isolated from the mold *Pythium ultimum*. It inhibits HMG-CoA reductase in a reversible and competitive manner with a K_i value of 1 nM for the open ring acid form of the molecule. During a 24 week study period, a dose of 30 mg/day mevastatin reduced plasma LDL-cholesterol approximately 29% in patients with familial hypercholesterolemia.

5 mg
10 mg
25 mg
50 mg



Also Available: *Mevastatin (sodium salt) (10010341)*

5 mg
10 mg
25 mg
50 mg

NEW Myriocin 63150

[35891-70-4] ISP-1, Thermozymocidin
MF: $C_{21}H_{39}NO_6$ **FW:** 401.5 **Purity:** ≥98%
A crystalline solid **Stability:** ≥2 years at -20°C
Summary: Myriocin is a potent inhibitor of serine palmitoyltransferase (K_i = 0.28 nM), the enzyme that catalyzes the first step of sphingolipid biosynthesis. Myriocin potently suppresses the development of atherosclerosis in apolipoprotein E (ApoE) gene knockout ($ApoE^{-/-}$) mice fed a high-fat diet.

1 mg
5 mg
10 mg
25 mg

2-amino-3,4-dihydroxy-2-(hydroxymethyl)-14-oxo-6-eicosenoic acid

Nitrotyrosine Monoclonal Antibody 189542

Purified IgG_{2b} in PBS, pH 7.2, containing 50% glycerol, 0.5 mg/ml BSA, and 0.02% sodium azide **Stability:** ≥2 years at -20°C
Summary: Antigen: peroxynitrite-treated KLH • Isotype: IgG_{2b} • Host: mouse • Applications: WB, IHC, IP, and EIA

50 µg
200 µg

Lane 1: *Nitrotyrosine BSA (0.05 µg)*
Lane 2: *Murine macrophage cell lysate treated with 3.1 mM peroxynitrite (0.05 µg)*

Also Available: *Nitrotyrosine Polyclonal Antibody (189540)* *1 ea*
Nitrotyrosine Monoclonal Antibody-Biotinylated (10006966) *100 µg*
Nitrotyrosine (Peptide) Polyclonal Antibody (10006778) *1 ea*

eNOS (bovine recombinant) 60880

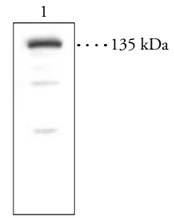
ecNOS , NOS III
MF: Homodimer **FW:** 135 kDa/subunit **Purity:** cell lysate 100,000 x g supernatant A solution in 50 mM HEPES, pH 7.4, containing 10% glycerol, 5 mM CHAPS, and 100 µM DTT **Stability:** ≥6 months at -80°C
Summary: EC 1.14.13.39 • Recombinant enzyme isolated from a Baculovirus overexpression system in Sf9 cells • One unit of enzyme produces 1 nmol of NO per minute at 37°C in 50 mM HEPES, pH 7.4, containing 50 µM arginine, 1 mM $CaCl_2$, 5 µM oxyhemoglobin, 20 µg/ml calmodulin, 0.1 mM NADPH, 12 µM tetrahydrobiopterin, and 170 µM DTT.

10 units

eNOS Polyclonal Antiserum 160880

ecNOS, NOS III
100 µl lyophilized antiserum **Stability:** ≥2 years at -20°C
Summary: Antigen: human eNOS amino acids 1186-1203 • Host: rabbit • Cross-reactivity: (+) bovine and human eNOS; (-) iNOS and nNOS • Applications: WB and IP; other applications not tested • eNOS catalyzes the formation of NO from L-arginine in many cell types including vascular endothelium, bronchiolar epithelium, cardiac myocytes, spleen, and kidney.

1 ea



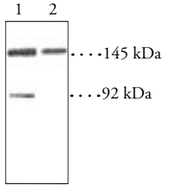
Lane 1: *Recombinant bovine eNOS Sf9 cell lysate (20 µg)*

Also Available: *eNOS Blocking Peptide (360881)* *200 µg*

NEW NPC1L1 Polyclonal Antibody 10005385

Niemann-Pick C1 Like 1
Peptide affinity-purified IgG **Stability:** ≥1 year at -20°C
Summary: Antigen: human NPC1L1 amino acids 596-610 • Host: rabbit • Cross-reactivity: (+) human NPC1L1; other species not tested • Applications: WB and ICC; other applications not tested • NPC1L1 is a transmembrane protein expressed in the brush border membrane of small intestine enterocytes. It is required for intestinal uptake of both cholesterol and phytosterols.

1 ea



Lane 1: *HEK293 cell lysate (50 µg)*
Lane 2: *HepG2 cell lysate (50 µg)*

Also Available: *NPC1L1 Blocking Peptide (10006985)* *200 µg*

Oleic Acid-2,6-diisopropylanilide 10006782

[140112-65-8]
MF: $C_{30}H_{51}NO$ **FW:** 441.7 **Purity:** ≥98%
A solution in methyl acetate **Stability:** ≥1 year at -20°C
Summary: Oleic acid-2,6-diisopropylanilide is an inhibitor of ACAT with an IC_{50} value of 7 nM. When co-administered to rabbits or rats fed a high fat, high cholesterol diet, oleic acid-2,6-diisopropylanilide decreased LDL and elevated HDL levels when administered at 0.05%.

5 mg
10 mg
50 mg
100 mg

N-[2,6-bis(1-methylethyl)phenyl]-9Z-octadecenamide

Oleyl Anilide 10006529

[5429-85-6] OA, Oleic Acid Anilide
MF: $C_{25}H_{39}NO$ **FW:** 357.6 **Purity:** ≥95%
A crystalline solid **Stability:** ≥2 years at -20°C
Summary: OA is a weak inhibitor of ACAT with an IC_{50} value of 26 µM. OA and the related glyceride dioleoyl phenylamino propane 1,2-diol have been linked to a syndrome of eosinophilia, excessive T-cell activation, and elevated IL-4, soluble IL-2R, and IL-5. The clinical consequences are an acute pulmonary inflammatory reaction followed by chronic neuropathy, myalgia, and autoimmune connective tissue disease, generally referred to as toxic oil syndrome (TOS). Aniline-denatured cooking oil is a source of OA associated with TOS.

5 mg
10 mg
50 mg
100 mg

N-phenyl-9Z-octadecenamide

Oxidized Lipid HPLC Mixture 34004

Purity: ≥98% for each compound
A solution in ethanol **Stability:** ≥1 year at -20°C
Summary: Cholesterol and LDL particles accumulate and become oxidized in the fatty deposits of atherosclerotic placques. Contained within these lipid deposits are the racemic monohydroxylation products of both linoleic acid and arachidonic acid. This HPLC mixture contains the free acid (non-esterified) forms of racemic 15-HETE, 9-HODE, and 13-HODE. 15-HETE is one of 5 different regioisomers produced by the random oxygenation of arachidonic acid. The 9- and 13- HODEs are the two different monohydroxylated regioisomers of linoleic acid produced during random free radical oxidation. In this mixture, the HODE compounds are provided both in their free acid form, and also esterified to cholesterol.

1 ea

Ozagrel 70515

[82571-53-7] OKY-046
MF: $C_{13}H_{12}N_2O_2$ **FW:** 228.3 **Purity:** ≥98%
A crystalline solid **Stability:** ≥1 year at -20°C
Summary: Ozagrel is a 1-alkyl imidazole derivative that acts as a selective inhibitor of TXA synthase with an IC_{50} value of 11 nM. The beneficial effects of TXA synthase inhibition by ozagrel include improved motor coordination after experimentally-induced stroke and antihypertensive effects in spontaneously hypertensive rats.

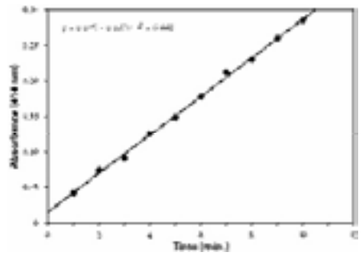
5 mg
10 mg
50 mg
100 mg

3-[4-(1H-imidazol-1-ylmethyl)phenyl]-2E-propenoic acid

PAF Acetylhydrolase Assay Kit 760901

Lp-PLA$_2$, PAF-AH
Stability: ≥1 year at -20°C
Summary: PAF is a biologically active phospholipid synthesized by a variety of stimulated cells. PAF is converted to the biologically inactive lyso-PAF by the enzyme PAF-AH. PAF-AHs are located intra- and extra-cellularly (*e.g.,* cytosolic and plasma). Recently, plasma PAF-AH has been linked to atherosclerosis and may be a positive risk factor for coronary heart disease in humans. Cayman's PAF-AH assay kit provides an accurate and convenient method for measurement of PAF-AH activity. The assay uses 2-thio PAF which serves as a substrate for PAF-AH. Upon hydrolysis of the acetyl thioester bond at the *sn*-2 position by PAF-AH, free thiols are detected using 5,5'-dithio-*bis*-(2-nitrobenzoic acid) (DTNB; Ellman's reagent).

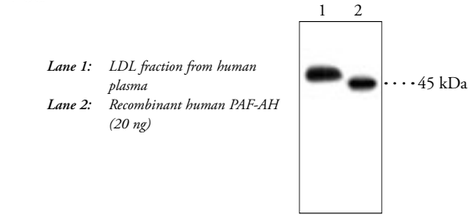
96 wells



PAF Acetylhydrolase (human) Polyclonal Antibody 160603

LP-PLA$_2$, PAF-AH
100 µl lyophilized antiserum **Stability:** ≥2 years at -20°C
Summary: Antigen: human PAF-AH C-terminal amino acids 420-441; the peptide sequence used as an antigen is 64% homologous to the corresponding bovine sequence • Host: rabbit • Cross-reactivity: (+) human plasma PAF-AH; (-) murine, guinea pig, canine, and chicken PAF-AH • Application: WB; other applications not tested

1 ea



Lane 1: *LDL fraction from human plasma*
Lane 2: *Recombinant human PAF-AH (20 ng)*

Also Available: *PAF Acetylhydrolase (human) Blocking Peptide (360603)* *200 µg*

NEW PAF Acetylhydrolase (human) Western Ready Control 10010081

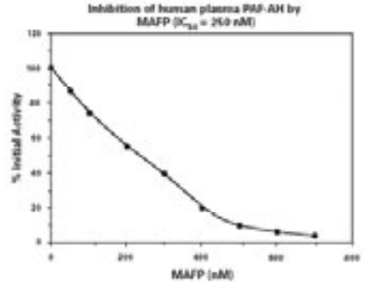
Platelet-activating Factor Acetylhydrolase; Lp-PLA$_2$; PAF-AH
Purity: 54 kDa
Stability: ≥6 months at -20°C
Summary: Source: human recombinant His-tagged protein expressed in *E. coli* • Application: Positive control for WB

1 ea

NEW PAF Acetylhydrolase Inhibitor Screening Assay Kit 10004380

Lp-PLA$_2$, PAF-AH
Stability: ≥6 months at -20°C
Summary: PAF is a biologically active phospholipid synthesized by a variety of stimulated cells. The biological effects of PAF include activation of platelets, PMNL, monocytes, and macrophages. PAF also increases vascular permeability, decreases cardiac output, induces hypotension, and stimulates uterine contraction. PAF is converted to the biologically inactive lyso-PAF by the enzyme PAF-AH. PAF-AHs are located intra- and extra-cellularly (*e.g.,* cytosolic and plasma). Recently, plasma PAF-AH has been linked to atherosclerosis and may be a positive risk factor for coronary heart disease in humans. Cayman's PAF-AH Inhibitor Screening Assay uses 2-thio PAF as a substrate for PAF-AH. Upon hydrolysis of the acetyl thioester bond at the *sn*-2 position by PAF-AH, free thiols are detected using 5,5'-dithio-*bis*-(2-nitrobenzoic acid) (DTNB; Ellman's reagent).

96 wells



PAF Receptor (human) Monoclonal Antibody 160600

100 µg protein-A purified IgG in 200 µl TBS, pH 7.4, containing 0.02% sodium azide **Stability:** ≥6 months at 4°C
Summary: Antigen: human PAF receptor amino acids 260-269 • Host: mouse • Cross-reactivity: (+) human, bovine, and porcine PAF receptors • Applications: flow cytometry and ICC; does not work for WB • Isotype: IgG_{2a} • Clone designation: 11A4 (clone 21)

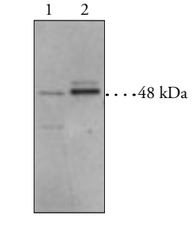
1 ea

Also Available: *PAF Receptor (human) Blocking Peptide (Monoclonal) (360600)* *200 µg*

PAF Receptor (human) Polyclonal Antibody 160602

Peptide affinity-purified IgG **Stability:** ≥1 year at -20°C
Summary: Antigen: human PAF receptor amino acids 1-17 • Host: rabbit • Cross-reactivity: (+) human and porcine PAF receptors • Applications: flow cytometry, ICC, and WB

1 ea



Lane 1: *U937 cell lysate (30 µg)*
Lane 2: *Raji cell lysate (30 µg)*

Also Available: *PAF Receptor (human) Blocking Peptide (Polyclonal) (160604)* *200 µg*

PAF C-16 60900

[74389-68-7]
MF: $C_{26}H_{54}NO_7P$ **FW:** 523.7 **Purity:** ≥98%
A lyophilized powder **Stability:** ≥1 year at -20°C
Summary: PAF C-16 is a naturally occurring phospholipid produced upon stimulation through two distinct pathways known as the 'remodeling' and *'de novo'* pathways. It is a potent mediator of neutrophil migration and the production of reactive oxygen species and IL-6 in human macrophages. It is a more potent mediator of platelet aggregation than PAF C-18. Pathological processes involving PAF include necrotizing enterocolitis, inflammation, asthma, and allergy.

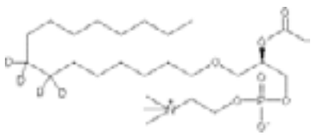
5 mg
10 mg
50 mg
100 mg

1-O-hexadecyl-2-O-acetyl-sn-glyceryl-3-phosphorylcholine

PAF C-16-d$_4$ 360900

MF: $C_{26}H_{50}D_4NO_7P$ **FW:** 527.7 **Chemical Purity:** ≥98%
Deuterium Incorporation: ≤1% d_0
A solution in ethanol **Stability:** ≥1 year at -20°C
Summary: PAF C-18-d$_4$ contains four deuterium atoms at the 7, 7', 8, and 8' positions. It is intended for use as an internal standard for the quantification of PAF C-16 by GC- or LC-MS.

100 µg
500 µg
1 mg
5 mg

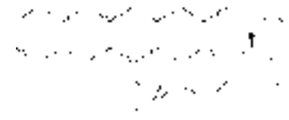


1-O-hexadecyl-(7,7,8,8-d$_4$)-2-O-acetyl-sn-glyceryl-3-phosphorylcholine

PAF C-18 60910

[74389-69-8]
MF: $C_{28}H_{58}NO_7P$ **FW:** 551.7 **Purity:** ≥97%
A solution in ethanol **Stability:** ≥2 years at -20°C
Summary: PAF C-18 is a naturally occurring phospholipid produced upon stimulation through two distinct pathways known as the 'remodeling' and *'de novo'* pathways. It is less potent than PAF C-16 in the induction of platelet aggregation, but equipotent in activation of guinea pig macrophages. PAF C-18 induces the release of PGE_2 and TXB_2 from albumin-elicited guinea pig macrophages and enhances the spreading of plated macrophages. Pathological processes involving PAF include necrotizing enterocolitis, inflammation, asthma, and allergy.

5 mg
10 mg
50 mg
100 mg



1-O-octadecyl-2-O-acetyl-sn-glyceryl-3-phosphorylcholine

PAz-PC 62924

[117205-52-4] Azelaoyl PC, 1-Palmitoyl-2-azelaoyl PC
MF: $C_{33}H_{64}NO_{10}P$ **FW:** 665.8 **Purity:** ≥98%
A solution in ethanol **Stability:** ≥1 year at -20°C
Summary: PAz-PC is one of the predominant phosphatidylcholine species containing a fragmented, oxidized short-chain fatty acid remnant at the *sn*-2 position found in oxLDL particles. These low molecular weight species are cytotoxic and pro-atherogenic and may be one of the important structural determinants of oxLDL.

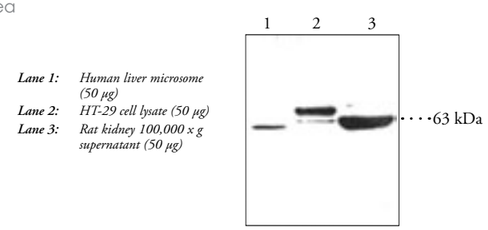
1 mg
5 mg
10 mg
50 mg

1-O-hexadecanoyl-2-O-(9-carboxyoctanoyl)-sn-glyceryl-3-phosphocholine

NEW PCSK9 (human) Polyclonal Antibody 10007185

NARC-1, Proprotein Convertase Subtilisin Kexin 9
Peptide affinity-purified IgG **Stability:** ≥1 year at -20°C
Summary: Antigen: human PCSK9 amino acids 490-502 • Host: rabbit • Cross-reactivity: (+) human, murine, and rat PCSK9 • Applications: WB and ICC • PCSK9 is a member of the subtilisin serine protease family with an important role in lipoprotein metabolism. Several gain of function mutations in the PCSK9 gene are associated with hypercholesterolemia which is characterized by an increase in LDL cholesterol levels.

1 ea



Also Available: *PCSK9 (human) Blocking Peptide (10007186)* *200 µg*

NEW PCSK9 (murine) Polyclonal Antibody 10008811

NARC-1, Proprotein Convertase Subtilisin Kexin 9
Peptide affinity-purified IgG **Stability:** ≥1 year at -20°C
Summary: Antigen: mouse PCSK9 amino acids 152-163 • Host: rabbit • Cross-reactivity: (+) human, murine, and rat PCSK9 • Applications: WB and ICC • PCSK9 is a member of the subtilisin serine protease family with an important role in lipoprotein metabolism. Severl gain of function mutations in the PCSK9 gene are associated with hypercholesterolemia which is characterized by an increase in LDL cholesterol levels.

1 ea

Also Available: *PCSK9 (murine) Blocking Peptide (10009581)* *200 µg*

NEW PCSK9 Western Ready Control 10009567

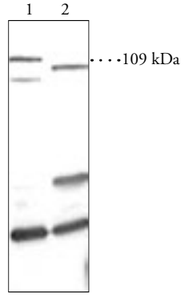
NARC-1; Proprotein Convertase Subtilisin Kexin 9
Purity: 78 kDa tagged; 74 kDa nativee
Stability: ≥6 months at -20°C
Summary: Source: human recombinant C-terminal His-tagged protein expressed in *E. coli* • Application: Positive control for WB

1 ea

NEW PGC-1 Polyclonal Antibody 10007185

PPARγ Coactivator 1
Peptide affinity-purified IgG **Stability:** ≥1 year at -20°C
Summary: Antigen: human PGC-1α amino acids 75-90 • Host: rabbit • Cross-reactivity: (+) human, murine, and rat PGC-1α and PGC-1β • Applications: WB and IHC (paraffin-embedded sections) • PPARγ coactivator (PGC-1a) plays a key role in energy metabolism, hepatic gluconeogenesis, and cholesterol homoeostasis. PGC-1b is also thought to activate oxidative metabolism in tissues.

1 ea



Also Available: *PGC-1 Blocking Peptide (301707)* *200 µg*

PGPC 10044

MF: $C_{29}H_{56}NO_{10}P$ **FW:** 609.7 **Purity:** ≥98%
A solution in ethanol **Stability:** ≥1 year at -20°C
Summary: PGPC is one of the predominant phosphatidylcholine species containing a fragmented, oxidized short-chain fatty acid remnant at the *sn*-2 position found in oxLDL particles. PGPC treatment of vascular endothelial cells induces the expression of both E-selectin and VCAM-1, and increases endothelial cell binding by both neutrophils and monocytes.

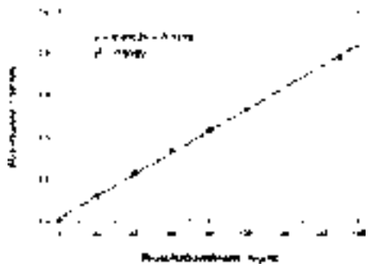
1 mg
5 mg
10 mg
50 mg

1-palmitoyl-2-(4-carboxybutanoyl)-sn-glycero-3-phosphatidylcholine

NEW Phosphatidylcholine Assay Kit 10009926

PC
Stability: ≥6 months at -20°C
Summary: Cayman's PC Assay Kit provides a specific, sensitive, and convenient method for quantifying PC in plasma or serum. In this assay, PC-specific PLD is first used to hydrolyze PC to choline and phosphatidic acid. The newly formed choline is then used to generate hydrogen peroxide in a reaction catalyzed by choline oxidase. Finally, with peroxidase as a catalyst, hydrogen peroxide reacts with DAOS and 4-aminoantipyrine to generate a blue dye with an optimal absorption at 595 nm.

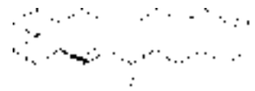
96 wells



Pinane Thromboxane A_2 19020

[71111-01-8] PTA_2
MF: $C_{24}H_{40}O_3$ **FW:** 376.6 **Purity:** ≥98%*
A solution in ethanol **Stability:** ≥1 year at -20°C
Summary: PTA_2 is a stable analog of TXA_2 that acts as a TP receptor antagonist and an inhibitor of TX synthase. PTA_2 inhibits U-46619-induced cat coronary artery constriction (ID_{50} = 0.1 µM), U-46619-induced aggregation of human platelets (IC_{50} = 2 µM), and rabbit platelet TX synthase (ID_{50} = 50 µM). PTA_2 does not affect PGI synthase up to a concentration of 100 µM.

500 µg
1 mg
5 mg
10 mg

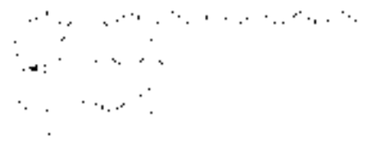


9α,11α-(dimethyl)methylene-15S-hydroxy-11a-deoxy-11a-methylene-thromba-5Z,13E-dien-1-oic acid

POV-PC 10031

2-(5-oxovaleryl) Phosphatidylcholine
MF: $C_{29}H_{56}NO_9P$ **FW:** 593.7 **Purity:** ≥98%
A solution in ethanol **Stability:** ≥1 year at -20°C
Summary: POV-PC is one of the oxLDL species derived from 2-arachidonoyl or eicosapentanoyl phospholipids. POV-PC confers CD36 scavenger receptor binding affinity more potently than any hydroperoxy PC species, and may be one of the more important structural determinants of oxLDL. Treatment of cultured endothelial cells with POV-PC stimulates monocyte binding, stimulates intracellular cAMP production, and strongly inhibits the LPS-induced binding of neutrophils.

1 mg
5 mg
10 mg
50 mg



1-palmitoyl-2-(5-oxovaleroyl)-sn-glycero-3-phosphatidylcholine

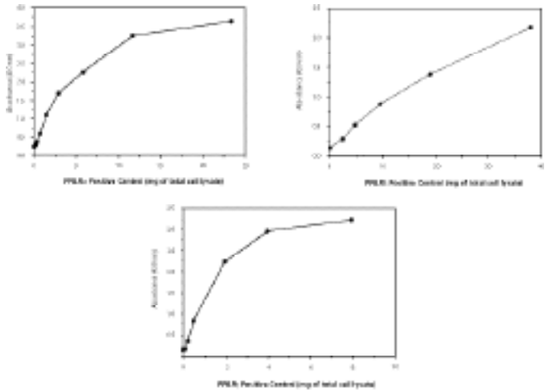
PPAR Transcription Factor Assay Kits

PPARs are ligand-activated transcription factors belonging to the large superfamily of nuclear receptors. PPARa primarily activates genes encoding proteins involved in fatty acid oxidation, while PPARg primarily activates genes directly involved in lipogenic pathway and insulin signalling. Members of the PPAR family are important direct targets of many antidiabetic and hypolipidemic drugs. Cayman's PPAR Transcription Factor Assays are a non-radioactive, sensitive method for detecting specific transcription factor DNA binding activity in nuclear extracts and whole cell lysates. A 96-well ELISA replaces the cumbersome radioactive electrophoretic mobility shift assay (EMSA). A specific double stranded DNA (dsDNA) sequence containing the PPAR response element is immobilized onto the bottom of wells of a 96-well plate. PPARs contained in a nuclear extract, bind specifically to the PPAR response element. PPARa, d, or g are detected by addition of specific primary antibodies directed against the individual PPARs. A secondary antibody conjugated to HRP is added to provide a sensitive colorimetric readout at 450 nm.

NEW PPARa, δ, g Complete Transcription Factor Assay Kit 10008878

Stability: ≥6 months at -20°C
Summary: This kit contains individual primary antibodies for PPARa, d, and g to follow detection of each receptor in separate wells of the plate.

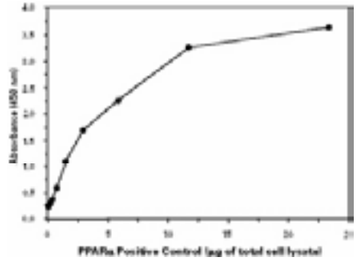
96 wells



PPARa Transcription Factor Assay Kit 10006915

Stability: ≥6 months at -20°C

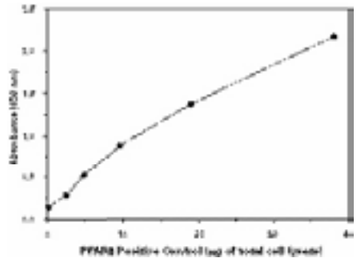
96 wells



PPARδ Transcription Factor Assay Kit 10006914

Stability: ≥6 months at -20°C

96 wells



**All 5-cis 2-series PGs (those containing a 5,6-double bond) will contain a small amount of the 5-trans isomer. This isomer is generally undetectable using normal phase silica columns and plates, but may be resolved using RP-HPLC. The purity for all such 2-series PGs excludes the 1-3% trans isomer which will generally be present.*

Tom Brock, Ph.D.

Inflammation in Atherosclerosis

Problems with Platelets & Prostaglandins

Platelets are known for their role in clot formation. However, they also contribute to the formation and extension of atherosclerotic plaques, promote inflammation in vessels, and impact vascular tone. A portion of these effects are through their production of the prostanoid thromboxane (TXA_2) and its interplay with endothelium-derived prostacyclin (prostaglandin I_2, PGI_2). These signalling pathways and their interactions are linked to the benefits of low dose aspirin, as well as the problems of selective cyclooxygenase-2 (COX-2) inhibitors, in the cardiovascular system.[1]

Platelets are anucleated cells that can respond to a variety of agonists with the typical cell signalling pathways that do not require transcriptional events. For example, they respond to PGI_2 in a receptor-mediated fashion that results in elevation of intracellular cAMP, which serves to suppress platelet function. On the other hand, platelets respond to thrombin and TXA_2, again through specific receptors, with a transient rise in intracellular calcium. Calcium activates cytosolic PLA_2 ($cPLA_2$) in platelets, leading to the release of arachidonic acid, which is then metabolized by cyclooxygenase-1 (COX-1) to produce TXA_2. TXA_2 is rapidly secreted and can, in turn, activate neighboring platelets, amplifying TXA_2 production and platelet activation. These activated platelets release a variety of pro-inflammatory mediators that affect the endothelium, smooth muscle and monocytes/macrophages in vessels. For example, activated platelets release IL-1β and CD-40L, which stimulate endothelial cells to synthesize cytokines (*e.g.*, IL-6, IL-8, MCP-1) and tissue factor, produce reactive oxygen species, and increase adhesion of leukoctyes. Also, platelets will release P-selectin, which causes monocytes to secrete chemokines and growth factors, as well as increase COX-2 expression, leading to the production of PGI_2 and prostaglandin E_2 (PGE_2). In addition, activated platelets will produce platelet factor 4 to stimulate monocyte differentiation into macrophages and matrix metalloproteases to promote degradation of matrix proteins in the vessel wall. TXA_2, then, is an important early messenger in atherosclerosis; the inhibition of TXA_2 synthesis, as well as the antagonism or knockout of the TXA_2 receptor (TP), delays atherogenesis in murine models.[2-4] Aspirin acetylates and permanently inhibits both COX-1 and COX-2. Low-dose aspirin effectively inhibits COX in circulating platelets and, as platelets lack nuclei, they are unable to transcribe new COX message. Low-dose aspirin, then, is effective therapy for delaying atherogenesis because it inhibits the generation of TXA_2 by platelets.

Opposing the effects of TXA_2 is another COX product, PGI_2. This prostanoid is manufactured by endothelial cells, monocytes and macrophages, and, in some cases, smooth muscle cells. While the constitutively expressed COX-1 enzyme can produce some PGI_2, induction of COX-2 expression selectively increases the synthesis of PGI_2 and PGE_2 (coupling to PGI synthase and mPGES-1, respectively) over other products, including TXA_2. PGI_2 potently relaxes vascular smooth muscle, is a vasodilator, an inhibitor of platelet aggregation, and PGI_2 analogs are used in the treatment of primary pulmonary hypertension. Through the IP receptor, PGI_2 increases cytoplasmic cAMP, which in turn suppresses activation of endothelial cells and leukocytes. At a more basic level, PGI_2, by elevating cAMP, inhibits $cPLA_2$ activity and thus prevents the release of arachidonic acid, the precursor for TXA_2 (and other COX products). So, PGI_2 actively reduces vascular tone, counters pro-inflammatory signals by suppressing cell activation, and inhibits the synthesis of pro-inflammatory mediators, like TXA_2. Importantly, selective inhibition of COX-2 may also selectively reduce the synthesis of PGI_2, as compared to TX.[5] As a result, selective COX-2 inhibitors will diminish the protection provided by PGI_2 against cardiovascular inflammation.

References

1. Davì, G. and Patrono, C. *New England Journal of Medicine* **357(24),** 2482-2494 (2007).
2. Praticò, D., Cyrus, T., Li, H., *et al. Blood* **96,** 3823-3826 (2000).
3. Kobayashi, T., Tahara, Y., Matsumoto, M., *et al. J. Clin. Invest.* **114(6),** 784-794 (2004).
4. Egan, K.M., Wang, M., Lucitt, M.B., *et al. Circulation* **111,** 334-342 (2005).
5. Cohen, J.C., Pertsemlidis, A., Fahmi, S., *et al. Proc. Natl. Acad. Sci. USA* **103(6),** 1810-1815 (2006).

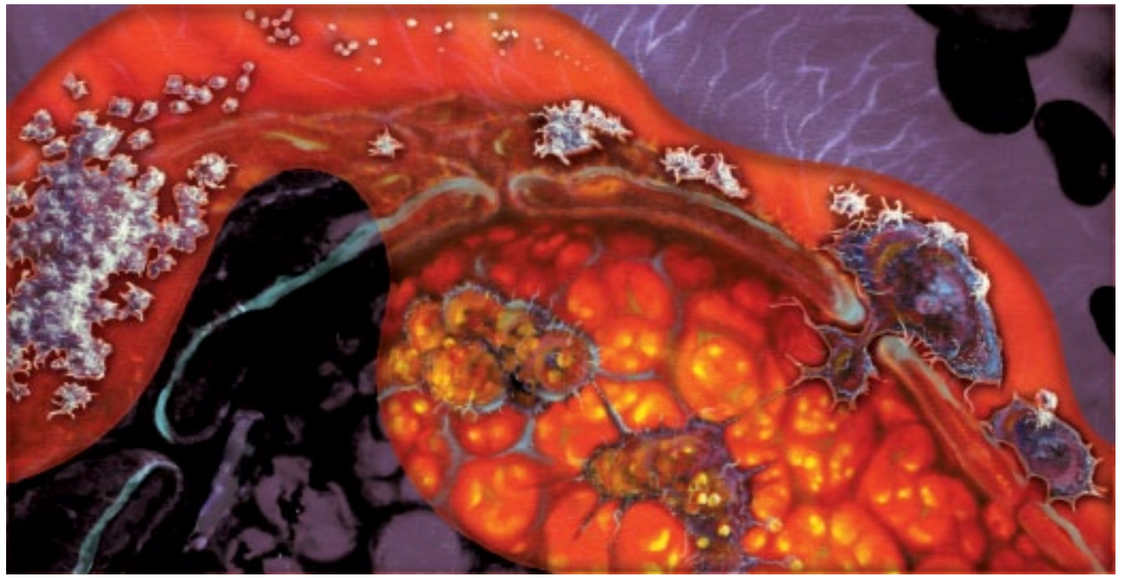


Figure 1. Circulating platelets may be activated by TXA_2 from stimulated monocytes macrophages. The activated platelets, in turn, release mediators (additional TXA_2, IL-1β, CD-40L, tissue factor, P-selectin, RANTES, MMPs, and platelet factor 4) that drive inflammatory and clotting cascades.

Tom Brock, Ph.D.

Drug Discovery Approaches

A common initial approach to addressing early signs of atherosclerosis involves diet modification, increased exercise, and smoking cessation. If these changes fail, pharmaceutical intervention may be necessary. Much of the current research focuses on developing drugs that alter lipid metabolism. Initial focus centered on lowering cholesterol levels, but with the recognition of "good" and "bad" cholesterols, the emphasis moved to include lowering the "bad" (LDL) cholesterol specifically. While this approach has proven to be quite effective in preventing disease progression, there remains room for improvement, both in preventing the development of advanced symptoms and in driving disease regression. Current efforts focus on increasing "good" (HDL) cholesterol levels, given its ability to actually remove cholesterol from vessels through reverse cholesterol transport. Treatments that increase HDL levels, or alter other aspects of lipid metabolism, are commonly tested in combination with LDL lowering drugs to determine if they provide an added benefit.

Lowering LDL Levels

The statins have been widely prescribed and are effective for the prevention and treatment of atherosclerosis.[1] The statins are inhibitors of HMG-CoA reductase inhibitors, blocking the rate-limiting step in the mevalonate pathway of cholesterol synthesis. Inhibition of this enzyme in the liver stimulates LDL receptor activity, increasing clearance of LDL from the bloodstream and further decreasing blood cholesterol levels. However, the effects of lowering plasma cholesterol are complex, in part because of the multiple genes that are upregulated in response to lowering cholesterol (see Article on SREBP-2, page 4). The statins as a group have relatively few undesirable side-effects and multiple trials have shown strong effects in reducing atherosclerotic disease events. Not all statins are the same, and there may be room to develop a better statin. An effective way to further lower LDL levels involves the use of niacin in combination with statins. Niacin (nicotinic acid, Vitamin B_3) alone lowers LDL levels, but less than statins. However, the combination of niacin and statins is superior to statins alone in decreasing both LDL and triglyceride levels and increasing HDL levels.

Another novel therapy involves blocking the synthesis of ApoB, which is necessary for forming LDL. Such treatments, which might use antisense RNA or siRNA, are currently being investigated.[2] The serum proprotein convertase subtilisin kexin type 9 (PCSK9) increases the turnover of the LDL receptor, increasing circulating plasma LDL cholesterol levels. Curiously, the expression of both PCSK9 and the LDL receptor are controlled by cholesterol levels through SREBP-2. As PCSK9 levels correlate well with LDL levels,[3] lowering PCSK9 expression or protein should be an effective way to reduce LDL.

Increasing HDL Levels

Numerous approaches to increasing HDL levels are currently in development. Niacin, mentioned above, remains the most effective. However, niacin has a 'nuisance' side effect, causing noticeable flushing (blushing of the face and neck), which also enhances removal of the niacin. This can be reduced by using extended release niacin. Another approach is to add an inhibitor of the agent that drives the flushing, prostaglandin D_2 (PGD_2). These could include drugs that block PGD_2 synthesis or antagonize the PGD_2 receptor.[4]

Fibrates have been shown to increase HDL, although less effectively than niacin. Fibrates activate peroxisomal proliferator-activated factor α (PPARα), a transcription factor involved in carbohydrate and fat metabolism. *Via* PPARα activation, fibrates increase the synthesis of ApoA1, which increases HDL formation. PPARα activation also increases synthesis of lipoprotein lipase, which hydrolyzes triglycerides in VLDL, IDL, and LDL. Because they modulate inflammatory pathways as well as lipid pathways, the use of PPAR activators represents a promising tool in the treatment of cardiovascular diseases.[5]

There is also interest in therapy with an ApoA1 variant called $ApoA1_{Milano}$. This naturally-occurring variant, identified by Cesare Sirtori in Milan, has been shown to drive atherosclerosis regression in experiments involving either protein infusion therapy or gene therapy.[6] In spite of these successes, use has been restricted due to the mode of therapy.

Another promising tactic involves inhibiting the activity of CETP, which transfers cholesteryl esters from HDL to LDL. In theory, this should maximize reverse cholesterol transport. Early trials of CETP inhibitors, either alone or in combination with statins, have shown significant deleterious side effects.[7] Side effects of the CETP inhibitor torcetrapib have included increased aldosterone, elevated blood pressure, and increased deaths, both cardiovascular and non-cardiovascular related. Importantly, increased aldosterone levels and blood pressure were not observed in rats given anacetrapib, another CETP inhibitor, suggesting that the problems with torcetrapib were unique to that compound and not characteristic of the drug class.

Finally, inhibition of cannabinoid receptors has proven useful. These receptors, which are known to be expressed in the central nervous system as well as in the periphery and regulate the central neural circuits for food uptake and peripheral metabolic circuits, were initially targeted as a way to control body weight. However, tests with rimonabant, a first generation antagonist of the cannabinoid receptor CB_1, have shown that it increases HDL level, decreases serum triglycerides, and improves insulin sensitivity. Additional cannabinoid receptor blockers have been developed and are in testing.

References

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2. Ito, M.K. *Ann. Pharmacother.* **41,** 1669-1678 (2007).
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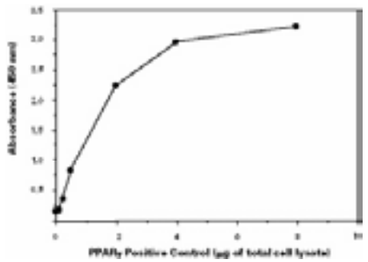
Cholesterol Synthesis Inhibitors

Cat. No. (salt form)	Name	Target Enzyme	K_i
10010334 (10010337)	Fluvastatin	HMG-CoA Reductase	0.3 nM
10010338 (10010339)	Lovastatin	HMG-CoA Reductase	0.6 nM
10010340 (10010341)	Mevastatin	HMG-CoA Reductase	1 nM
10010342 (10010343)	Pravastatin	HMG-CoA Reductase	2.3 nM
10006415	Ro 48-8071	Oxidosqualene Cyclase	1.5-6.5 nM
10010344 (10010345)	Simvastatin	HMG-CoA Reductase	0.12 nM

PPARγ Transcription Factor Assay Kit 10006855

Stability: ≥6 months at -20°C

96 wells



NEW PPARα LBD (human recombinant) 10009088

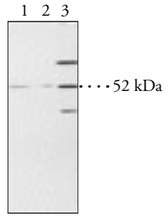
PPARα Ligand Binding Domain
Purity: ≥90%
A solution in 50 mM sodium phosphate, pH 7.2, containing 20% glycerol, 100 mM sodium chloride, and 1 mM DTT **Stability:** ≥6 months at -80°C
Summary: Source: recombinant His-tagged protein purified from *E. coli* • M_r: 34 kDa

25 µg
50 µg
100 µg

PPARα Polyclonal Antibody 101710

Peptide affinity-purified IgG **Stability:** ≥1 year at 4°C
Summary: Antigen: human, murine, and rat PPARα amino acids 22-36 • Host: rabbit • Cross-reactivity: (+) human, murine, rat, ovine, and porcine PPARα; (-) PPARγ • Application: WB; other applications not tested • PPARα is a ligand-activated transcription factor involved in the regulation of lipid homeostasis.

1 ea



Also Available: *PPARα Blocking Peptide (301710)* *200 µg*

NEW PPARδ (human recombinant) 10007451

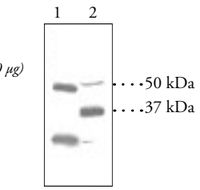
FAAR, NUC1, Nuclear Hormone Receptor 1, PPARβ
Purity: ≥95%
A solution in 50 mM sodium phosphate, pH 7.2, containing 20% glycerol, 150 mM sodium chloride, and 1 mM DTT **Stability:** ≥6 months at -80°C
Summary: Source: recombinant protein isolated from baculovirus overexpression system in Sf21 cells • M_r: 54 kDa

10 µg
25 µg
50 µg

NEW PPARδ Polyclonal Antibody 101720

FAAR, NUC1, Nuclear Hormone Receptor 1, PPARβ
Peptide affinity-purified IgG **Stability:** ≥1 year at -20°C
Summary: Antigen: human PPARδ amino acids 39-54 • Host: rabbit • Cross-reactivity: (+) human, murine, ovine, porcine, and rat PPARδ; other species not tested • Applications: WB, IHC, and ICC; other applications not tested

1 ea



Also Available: *PPARδ Blocking Peptide (10006247)* *200 µg*

NEW PPARd Western Ready Control 10009568

FAAR, NUC1, Nuclear Hormone Receptor 1, PPARβ
Purity: 54 kDa tagged; 51 kDa native
Stability: ≥6 months at -20°C
Summary: Source: human recombinant N-terminal His-tagged protein expressed in Sf21 cells • Application: Positive control for WB

1 ea

NEW PPARγ FL (human recombinant from *E. coli*) 61700

PPARγ Full Length
Purity: ≥90% by SDS-PAGE
A solution in 20 mM Tris HCl, pH 8.0, containing 250 mM KCl, 20% glycerol, 5 mM DTT, and 0.5 mM EDTA **Stability:** ≥6 months at -80°C
Summary: Source: human recombinant N-terminal His-tagged protein expressed in *E. coli* • M_r: 60 kDa

5 µg
10 µg
25 µg
50 µg

NEW PPARγ FL (human recombinant from Sf21 cells) 10009987

PPARγ Full Length
Purity: ≥80% by SDS-PAGE
A solution in 50 mM sodium phosphate, pH 7.2, containing 100 mM NaCl, 20% glycerol, 1 mM DTT, and 20% mM glycerol **Stability:** ≥6 months at -80°C
Summary: Source: human recombinant N-terminal His-tagged protein expressed in Sf21 cells • M_r: ~60 kDa

5 µg
10 µg
25 µg
50 µg

NEW PPARγ LBD (human recombinant) 10007941

PPARγ Ligand Binding Domain
Purity: ≥90%
A solution in 50 mM sodium phosphate, pH 7.2, containing 20% glycerol, 150 mM sodium chloride, and 1 mM DTT **Stability:** ≥6 months at -80°C
Summary: Source: recombinant N-terminal His-tagged protein expressed in *E. coli* • M_r: 34 kDa

25 µg
50 µg
100 µg

PPARγ-PAK 71000

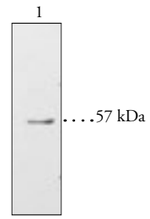
Purity: ≥98% **Stability:** ≥1 year at -20°C
Summary: The Cayman PPARg-PAK contains a combination of frequently used ligands for PPARg. Each kit contains ciglitazone, the first characterized member of the thiazolidinedione (TZD) class that binds to the PPARg ligand-binding domain with an EC_{50} value of 3.0 µM. Rosiglitazone, a key reference TZD also called BRL 49653, is another PPARg agonist provided. Also included is troglitazone (Resulin™), another TZD; it was withdrawn from human therapeutic use due to hepatotoxicity. Also in this assortment is 15-deoxy-$Δ^{12,14}$-PGJ_2, a potent PPARg ligand derived from PGD_2. The actions of all of these compounds can be antagonized by the selective PPARg antagonist, GW 9662, which is also in the kit.

1 ea

PPARγ Polyclonal Antibody 101700

Peroxisome Proliferator-activated Receptor γ-PAK
Peptide affinity-purified IgG **Stability:** ≥1 year at -20°C
Summary: Antigen: human PPARγ1 amino acids 82-101; amino acids 110-129 of PPARγ2 • Host: rabbit • Cross-reactivity: (+) human and murine PPARγ1 and PPARγ2 • Application: WB; other applications not tested • PPARg is a ligand-activated transcription factor involved in the regulation of lipid homeostasis and may function as a master regulator of adipogenesis.

1 ea

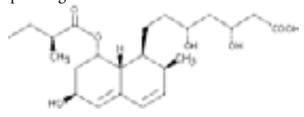


Also Available: *PPARγ Blocking Peptide (301700)* *200 µg*

NEW Pravastatin 10010342

[81093-37-4]
MF: $C_{23}H_{36}O_7$ **FW:** 424.5 **Purity:** ≥98%
A crystalline solid **Stability:** ≥2 years at -20°C
Summary: Pravastatin is a HMG-CoA reductase inhibitor that is a ring hydroxylated metabolite of mevastatin. It is a competitive inhibitor of HMG-CoA reductase with a K_i value of 2.3 nM for the active, open ring form of the molecule.

10 mg
25 mg
50 mg
100 mg



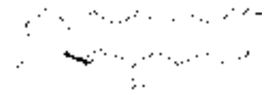
Also Available: *Pravastain (sodium salt) (10010343)*

10 mg
25 mg
50 mg
100 mg

Prostaglandin E_1 13010

[745-65-3] Alprostadil
MF: $C_{20}H_{34}O_5$ **FW:** 354.5 **Purity:** ≥98%
Light yellow to white needles **Stability:** ≥2 years at -20°C
Summary: PGE_1 is the theoretical COX metabolite of dihomo-g-linolenic acid (DGLA), but it is virtually undetectable in the plasma of normal humans or other animals. Its pharmacology includes vasodilation, hypotension, and anti-platelet activities. The IC_{50} value of PGE_1 for the inhibition of ADP-induced human platelet aggregation is 40 nM. The vasorelaxant and anti-hypertensive effects of PGE_1 are used to treat male erectile dysfunction and to provide emergency vasodilation of the patent ductus arteriosus in infants whose cardiac anomalies require pulmonary shunting for survival.

1 mg
5 mg
10 mg
50 mg

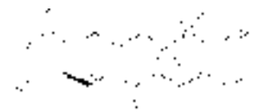


9-oxo-11α,15S-dihydroxy-prost-13E-en-1-oic acid

Prostaglandin E_1-d_4 313010

Alprostadil-d_4
MF: $C_{20}H_{30}D_4O_5$ **FW:** 358.5 **Chemical Purity:** ≥99%
Deuterium Incorporation: ≤1% d_0
A solution in methyl acetate **Stability:** ≥1 year at -20°C
Summary: PGE1-d_4 contains four deuterium atoms at the 3, 3', 4, and 4' positions. It is intended for use as an internal standard for the quantification of PGE_1 by GC- or LC-MS.

50 µg
100 µg
500 µg
5 mg



9-oxo-11α,15S-dihydroxy-prost-13E-en-1-oic-3,3,4,4-d_4 acid

2,3-dinor-6-keto Prostaglandin $F_{1\alpha}$ EIA Kit 515121

Stability: ≥1 year at -20°C

Summary: Prostacyclin (Prostaglandin I_2; PGI_2) is formed from arachidonic acid primarily in the vascular endothelium and renal cortex by sequential activities of COX and PGI_2 synthase. It is a potent vasodilator and inhibitor of platelet aggregation. PGI_2 is non-enzymatically hydrated to 6-keto $PGF_{1\alpha}$, and then quickly converted to the major urinary metabolite, 2,3-dinor-6-keto $PGF_{1\alpha}$. Estimates of systemic PGI_2 production have often been assessed by measurement of 6-keto $PGF_{1\alpha}$ alone or in combination with 2,3-dinor-6-keto $PGF_{1\alpha}$. However, the majority of 6-keto $PGF_{1\alpha}$ in urine is of renal origin with only 14% originating from plasma. Cayman's 2,3-dinor-6-keto $PGF_{1\alpha}$ EIA utilizes a highly selective monoclonal antibody that exhibits no cross reactivity with 6-keto $PGF_{1\alpha}$, thus providing a method for accurate measurement of systemic PGI_2 production. These measurements are highly relevant to vascular biology research, especially as is relates to the elevated risk of myocardial infarction and stroke associated with the use of COX-2 selective inhibitors.

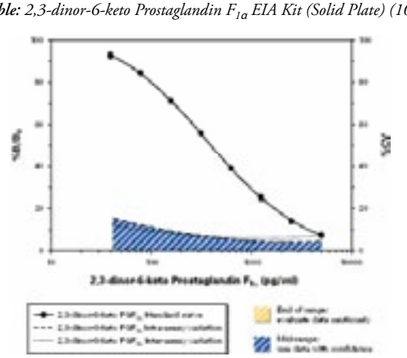
Sensitivity: 50% B/B_0: 400 pg/ml
80% B/B_0: 100 pg/ml

Specificity:

2,3-dinor-6-keto Prostaglandin $F_{1\alpha}$	100%
tetranor-PGFM	0.07%
Prostaglandin B_1	<0.01%
Prostaglandin B_2	<0.01%
Prostaglandin E_1	<0.01%
Prostaglandin E_2	<0.01%
Prostaglandin $F_{1\alpha}$	<0.01%
13,14-dihydro-Prostaglandin $F_{1\alpha}$	<0.01%
6,15-diketo-13,14-dihydro-Prostaglandin $F_{1\alpha}$	<0.01%
6-keto Prostaglandin $F_{1\alpha}$	<0.01%
Prostaglandin $F_{2\alpha}$	<0.01%
15-keto Prostaglandin $F_{2\alpha}$	<0.01%
Thromboxane B_2	<0.01%

96 wells
480 wells

Also Available: *2,3-dinor-6-keto Prostaglandin $F_{1\alpha}$ EIA Kit (Solid Plate) (10008826)*



6-keto Prostaglandin $F_{1\alpha}$ 15210

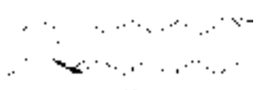
[58962-34-8]

MF: $C_{20}H_{34}O_6$ **FW:** 370.5 **Purity:** ≥99%

A crystalline solid **Stability:** ≥2 years at -20°C

Summary: 6-keto $PGF_{1\alpha}$ is the inactive, non-enzymatic hydrolysis product of PGI_2. 6-keto $PGF_{1\alpha}$ serves as a useful marker of PGI_2 biosynthesis *in vivo*. When [^{3}H]-PGI_2 is injected into healthy human males, 6.6% of the radioactivity is recovered from urine as [^{3}H]-6-keto $PGF_{1\alpha}$.

1 mg
5 mg
10 mg
50 mg



6-oxo-9α,11α,15S-trihydroxy-prost-13E-en-1-oic acid

6-keto Prostaglandin $F_{1\alpha}$-d_4 315210

MF: $C_{20}H_{30}D_4O_6$ **FW:** 374.5 **Chemical Purity:** ≥98%

Deuterium Incorporation: ≤1% d_0

A solution in methyl acetate **Stability:** ≥1 year at -20°C

Summary: $PGF_{1\alpha}$-d_4 contains four deuterium atoms at the 3, 3', 4, and 4' positions. It is intended for use as an internal standard for the quantification of 6-keto $PGF_{1\alpha}$ by GC- or LC-MS.

25 µg
50 µg
100 µg
1 mg

6-oxo-9α,11α,15S-trihydroxy-prost-13E-en-1-oic-3,3,4,4-d_4 acid

6-keto Prostaglandin $F_{1\alpha}$ EIA Kit 515211

Stability: ≥1 year at -20°C

Summary: Prostacyclin (Prostaglandin I_2; PGI_2) is formed from arachidonic acid primarily by the vascular endothelium and renal cortex. It is a potent vasodilator and inhibitor of platelet aggregation. PGI_2 is non-enzymatically hydrated to 6-keto $PGF_{1\alpha}$ ($t_{1/2}$ = 2-3 minutes), and then quickly converted to the major metabolite, 2,3-dinor-6-keto $PGF_{1\alpha}$ ($t_{1/2}$ = 30 minutes). Prostacyclin was once thought to be a circulating hormone that regulated platelet-vasculature interactions, but the rate of secretion into circulation coupled with the short half-life indicate that prostacyclin functions locally. Although 6-keto $PGF_{1\alpha}$ is commonly measured in plasma and urine as an estimate of prostacyclin synthesis, it should be noted that there may be more than one source of PGI_2 in these samples. For instance, venipuncture may cause the release of prostacyclin which will artifactually increase the 6-keto $PGF_{1\alpha}$ concentration in plasma. Urinary concentrations of 6-keto $PGF_{1\alpha}$ are confounded by the fact that some plasma prostacyclin (~14%) is excreted into urine as 6-keto $PGF_{1\alpha}$ and the remainder is of renal origin. Therefore, it is important to take these factors into account when analyzing data.

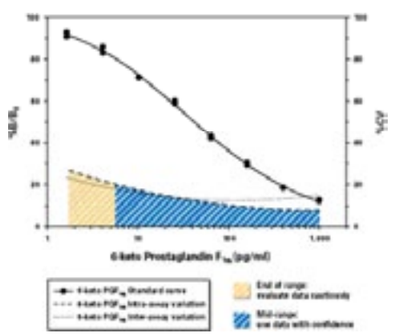
Sensitivity: 50% B/B_0: 43 pg/ml
80% B/B_0: 11 pg/ml

Specificity:

6-keto Prostaglandin $F_{1\alpha}$	100%
6-keto Prostaglandin E_1	33.9%
Prostaglandin $F_{1\alpha}$	28%
Prostaglandin $F_{2\alpha}$	11%
2,3-dinor-6-keto Prostaglandin $F_{1\alpha}$	4.9%
Prostaglandin E_2	1.5%
6,15-diketo-13,14-dihydro Prostaglandin $F_{1\alpha}$	0.33%
13,14-dihydro-15-keto Prostaglandin $F_{1\alpha}$	0.05%
Thromboxane B_2	0.05%
tetranor-PGEM	<0.01%
tetranor-PGFM	<0.01%
Prostaglandin D_2	<0.01%

96 wells
480 wells

Also Available: *6-keto Prostaglandin $F_{1\alpha}$ EIA Kit (Solid Plate) (515211.1)*



NEW 9,11-methane-epoxy Prostaglandin $F_{1\alpha}$ 10007850

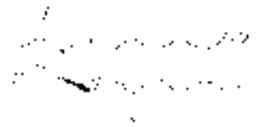
[72517-81-8] 9,11-epoxymethano PGH_1

MF: $C_{21}H_{36}O_4$ **FW:** 352.5 **Purity:** ≥96%

A solution in methyl acetate **Stability:** ≥1 year at -20°C

Summary: 9,11-methane-epoxy $PGF_{1\alpha}$ is a stable epoxymethano analog of PGH_1 that produces a strong and dose-related aggregation of washed rabbit platelets (EC_{50} = 0.88 µM) and contraction of rabbit aortic strips (EC_{50} = 0.11 µM). 9,11-methane-epoxy $PGF_{1\alpha}$ induces contraction of guinea pig tracheas (EC_{50} = 3.4 µM) with a maximal contraction of about 60% of that caused by a submaximal dose of histamine.

100 µg
500 mg
1 mg
5 mg



6-(3-hydroxy-1-octenyl)-2-oxabicyclo[2.2.1]heptane-5-heptanoic acid

Prostaglandin H_2 17020

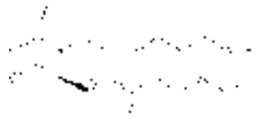
[42935-17-1]

MF: $C_{20}H_{32}O_5$ **FW:** 352.5 **Purity:** ≥95%*

A solution in acetone **Stability:** ≥6 months at -80°C

Summary: PGH_2 is the product of COX-1 and COX-2 metabolism of arachidonic acid and serves as the precursor for all 2-series PGs and TXs. It is a TP receptor agonist which irreversibly aggregates human platelets at 50-100 ng/ml. PGH_2 is a suicide substrate for platelet TX synthase possessing a K_i value of 18 µM as compared to 28 µM for PGH_1.

25 µg
50 µg
100 µg
500 µg



9α,11α-epidioxy-15S-hydroxy-prosta-5Z,13E-dien-1-oic acid

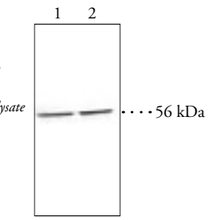
Prostaglandin I Synthase Polyclonal Antibody 160640

PGI Synthase, PGIS, Prostacyclin Synthase

Peptide affinity-purified IgG **Stability:** ≥1 year at -20°C

Summary: Antigen: bovine PGI synthase amino acids 299-329 • Host: rabbit • Cross-reactivity: (+) bovine, ovine, and human PGI synthase; (-) rat PGI synthase • Applications: WB and IP; other applications not tested • PGIS catalyzes the isomerization of PGH_2 to PGI_2, a potent vasodilator and inhibitor of platelet aggregation

1 ea



Lane 1: *Ovine PGI synthase (partially purified)*
Lane 2: *Bovine aorta endothelial cell lysate*

Also Available: *Prostaglandin I Synthase Blocking Peptide (360640)* *200 µg*

Prostaglandin I_2 (sodium salt) 18220

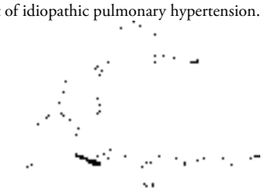
[[61849-14-7] Epoprostenol (sodium salt), Prostacyclin (sodium salt)

MF: $C_{20}H_{31}O_5$ • Na **FW:** 374.5 **Purity:** ≥99%

A crystalline solid **Stability:** ≥1 year at -20°C

Summary: PGI_2 is a potent vasodilator and inhibitor of human platelet aggregation with an IC_{50} value of 5 nM. PGI_2 is rapidly hydrolyzed to 6-keto $PGF_{1\alpha}$ with a half-life ranging from 30 seconds to a few minutes. PGI_2 is administered by continuous infusion in humans for the treatment of idiopathic pulmonary hypertension.

1 mg
5 mg
10 mg
50 mg



6,9α-epoxy-11α,15S-dihydroxy-prosta-5Z,13E-dien-1-oic acid, sodium salt

Prostaglandin I_3 (sodium salt) 18300

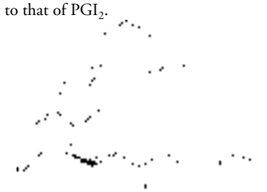
[68324-96-9]

MF: $C_{20}H_{29}O_5$ • Na **FW:** 372.4 **Purity:** ≥99%

A crystalline solid **Stability:** ≥6 months at -20°C

Summary: PGI_3 is synthesized from EPA by COX and PGI synthase. PGI_3 has a short *in vivo* half-life and is hydrolyzed to D^{17}-6-keto $PGF_{1\alpha}$. The platelet and vascular activity of PGI_3 is equivalent to that of PGI_2.

500 µg
1 mg
5 mg
10 mg



6,9α-epoxy-11α,15S-dihydroxy-prosta-5Z,13E,17Z-trien-1-oic acid, sodium salt

15-deoxy-$\Delta^{12,14}$-Prostaglandin J_2 18570

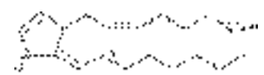
[89886-60-2]

MF: $C_{20}H_{28}O_3$ **FW:** 316.4 **Purity:** ≥97%*

A solution in methyl acetate **Stability:** ≥1 year at -20°C

Summary: 15-deoxy-$D^{12,14}$-PGJ_2 is formed from PGD_2 by the elimination of two molecules of water. It binds selectively to PPARγ with an EC_{50} value of 2 µM in a murine chimera system. 15-deoxy-$D^{12,14}$-PGJ_2 is more potent than PGD_2, D^{12}-PGJ_2, and PGJ_2 in stimulating lipogenesis in C3H10T1/2 cells. The EC_{50} value for induction of adipocyte differentiation in cultured fibroblasts is 7 µM.

100 µg
500 µg
1 mg
5 mg



11-oxo-prosta-5Z,9,12E,14Z-tetraen-1-oic acid

Also Available: *15-deoxy-$D^{12,14}$-Prostaglandin J_2 (18570.1)*

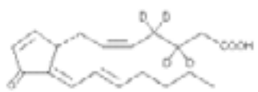
1 mg
5 mg
10 mg
50 mg

**All 5-cis 2-series PGs (those containing a 5,6-double bond) will contain a small amount of the 5-trans isomer. This isomer is generally undetectable using normal phase silica columns and plates, but may be resolved using RP-HPLC. The purity for all such 2-series PGs excludes the 1-3% trans isomer which will generally be present.*

15-deoxy-Δ^{12,14}-Prostaglandin J$_2$-d$_4$ 318570

MF: $C_{20}H_{24}D_4O_3$ **FW:** 320.5 **Chemical Purity:** ≥98%*
Deuterium Incorporation: ≤1% d_0
A solution in methyl acetate **Stability:** ≥1 year at -20°C
Summary: 15-deoxy-D^{12,14}-PGJ$_2$-d$_4$ contains four deuterium atoms at the 3, 3', 4, and 4' positions. It is intended for use as an internal standard for the quantification of 15-deoxy-D^{12,14}-PGJ$_2$ by GC- or LC-MS.

25 µg
50 µg
100 µg
1 mg



11-oxo-prosta-5Z,9,12E,14Z-tetraen-1-oic-3,3,4,4-d$_4$ acid

Renin (human recombinant) 10006217

M$_r$: 40 kDa **Purity:** ≥99% by SDS-PAGE
A solution in sodium acetate buffer **Stability:** ≥1 year at -20°C
Summary: Source: recombinant enzyme expressed in HEK cells • M$_r$: 40 kDa • Renin is an aspartyl protease that catalyzes the initial and rate limiting step in the renin-angiotensin system (RAS) pathway, converting angiotensinogen into angiotensin I.

5 µg
10 µg
25 µg
50 µg

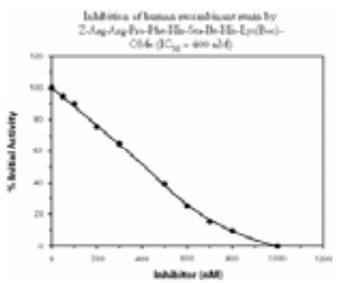
Also Available: *Prorenin (human recombinant) (10007599)*

25 µg
50 µg
100 µg
500 µg

NEW Renin Inhibitor Screening Assay Kit 10006270

Stability: ≥6 months at -80°C
Summary: Renin is an aspartyl protease that catalyzes the initial and rate limiting step in the renin-angiotensin system (RAS) pathway, converting angiotensinogen into angiotensin I. Angiotensin Converting Enzyme (ACE) subsequently converts angiotensin I to angiotensin II, which is a potent vasoconstrictor. The Cayman Chemical Renin Inhibitor Screening Assay Kit provides a convenient assay in a 96-well format for evaluating human renin inhibitors. The assay utilizes a renin-based synthetic peptide substrate which incorporates the fluorophore EDANS at one end and an EDAN-quenching molecule (Dabcyl) at the other end. After cleavage by renin, the peptide-EDANS product is released yielding bright fluorescence that can be easily analyzed using excitation wavelengths of 335-345 nm and emission wavelengths of 485-510 nm. The assay kit includes recombinant human renin (sufficient for 100 reactions), substrate, buffers, and complete instructions.

96 wells

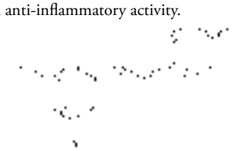


All 5-cis 2-series PGs (those containing a 5,6-double bond) will contain a small amount of the 5-trans isomer. This isomer is generally undetectable using normal phase silica columns and plates, but may be resolved using RP-HPLC. The purity for all such 2-series PGs excludes the 1-3% trans isomer which will generally be present.

trans-Resveratrol 70675

[501-36-0]
MF: $C_{14}H_{12}O_3$ **FW:** 228.2 **Purity:** ≥98%
A crystalline solid **Stability:** ≥1 year at -20°C
Summary: *trans*-Resveratrol is a potent phenolic antioxidant found in grapes and red wine that also has antiproliferative and anti-inflammatory activity.

50 mg
100 mg
250 mg
500 mg



5-[(1E)-2-(4-hydroxyphenyl)ethenyl]-1,3-benzenediol

Ro 48-8071 10006415

[161582-11-2]
MF: $C_{23}H_{27}BrFNO_2$ **FW:** 448.4 **Purity:** ≥98%
A solution in methyl acetate **Stability:** ≥1 year at -20°C
Summary: Oxidosqualene cyclase (OSC) is a microsomal enzyme that catalyzes the cyclization of monooxidosqualene to lanosterol in the cholesterol synthetic pathway. Ro 48-8071 is an inhibitor of OSC that has LDL cholesterol lowering activity similar to the HMG-CoA inhibitor simvastatin. It inhibits OSC from human liver microsomes and HepG2 cells with IC$_{50}$ values of approximately 6.5 nM and 1.5 nM, respectively. Ro 48-8071 lowered LDL cholesterol ~40% in hamsters at a dose of 150 µg/kg without affecting HDL levels and with no sign of liver toxicity.

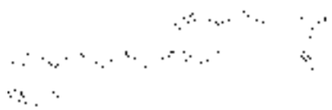
5 mg
10 mg
50 mg
100 mg

(4-bromophenyl)[2-fluoro-4-[[6-(methyl-2-propenylamino)hexyl]oxy]phenyl]-methanone

NEW Rosiglitazone 71740

[122320-73-4] BRL 49653
MF: $C_{18}H_{19}N_3O_3S$ **FW:** 357.4 **Purity:** ≥98%
A crystalline solid **Stability:** ≥2 years at -20°C
Summary: Rosiglitazone is a potent and selective PPARγ ligand. It binds to the PPARγ ligand-binding domain with a K$_d$ of 43 nM. It activates luciferase-based expression constructs for PPARγ1 and PPARγ2 with EC$_{50}$ values of approximately 30 nM and 100 nM, respectively. Rosiglitazone is active *in vivo* as a antidiabetic agent in the *ob/ob* mouse model, and has been used as an oral hypoglycemic agent in the treatment of Type II diabetes in humans for many years.

5 mg
10 mg
50 mg
100 mg

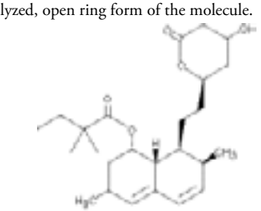


5-[[4-[2-(methyl-2-pyridinylamino)ethoxy]phenyl]methyl]-2,4-thiazolidinedione

NEW Simvastatin 10010344

[79902-63-9]
MF: $C_{25}H_{38}O_5$ **FW:** 357.4 **Purity:** ≥98%
A crystalline solid **Stability:** ≥2 years at -20°C
Summary: Simvastatin is competitive inhibitor of HMG-CoA reductase with a K$_i$ value of 0.12 nM for the hydrolyzed, open ring form of the molecule.

5 mg
10 mg
25 mg
50 mg



Also Available: *Simvastatin (sodium salt) (10010345)*

5 mg
10 mg
25 mg
50 mg

SQ 29,548 19025

[98672-91-4]
MF: $C_{21}H_{29}N_3O_4$ **FW:** 387.5 **Purity:** ≥99%*
A crystalline solid **Stability:** ≥1 year at -20°C
Summary: SQ 29,548 is a highly selective TP receptor antagonist which binds to the human recombinant TP receptor with a K$_i$ value of 4.1 nM. It inhibits the aggregation of washed human platelets induced by U-46619 with an IC$_{50}$ value of 0.06 µM. It antagonizes U-46619 induced contraction of rat and guinea pig tracheal, arterial, and venous smooth muscles with drug/receptor dissociation constants (KB) in the range of 0.5-1.7 nM.

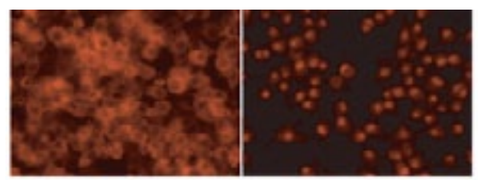
1 mg
5 mg
10 mg
100 mg

[1S-[1α,2α(Z),3α,4α]]-7-[3-[[2-[(phenylamino)carbonyl]hydrazino]methyl]-7-oxabicyclo[2.2.1]hept-2-yl]-5-heptenoic acid

NEW SREBP-2 Cell-Based Translocation Assay Kit 10009239

SREBF-2
Stability: ≥6 months at -20°C
Summary: SREBP-2 is a transcription factor that regulates cholesterol synthesis by activating the expression of genes for HMG-CoA reductase and other enzymes of the cholesterol synthetic pathway. Cayman's SREBP-2 Cell-Based Translocation Assay Kit provides the tools needed to study SREBP-2 movement within whole cells. The kit contains a highly specific SREBP-2 primary antibody together with a DyLight™ (trademarked by Pierce Biotechnology Inc.) conjugated secondary antibody in a ready to use format. Also included as a positive control is a cholesterol trafficking inhibitor, U18666A, which has been shown to activate SREBP-2 translocation into nuclei by scientists at Cayman Chemical Company.

96 wells

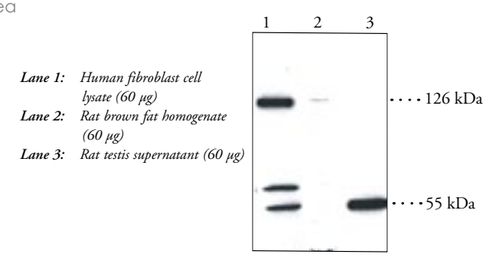


Translocation of SREBP-2 from nuclei by 24 µM U-18666A. Raw 264.7 cells were seeded in a 96-well plate at a density of 5×10^4 cells/well and cultured overnight. The next day, cells were treated with DMSO (vehicle) or 24 µM U-18666A for 72 hours. Left panels: Cells treated with DMSO alone demonstrate cytoplasmic localization of SREBP-2, indicating that most of cells have inactive protein. Right panels: U-18666A treatment for three days induced SREBP-2 translocation into the nuclei, indicating that blockage of cholesterol transport in these cells activates the protein.

NEW SREBP-2 Polyclonal Antibody 10007663

SREBF-2
Peptide affinity-purified IgG **Stability:** ≥1 year at -20°C
Summary: Antigen: human SREBP-2 amino acids 455-469 • Host: rabbit • Cross-reactivity: (+) human, murine, and rat SREBP-2 • Applications: WB and ICC • SREBP-2 is a transcription factor that plays a critical role in lipid homeostasis by regulating genes involved in cholesterol and fatty acid metabolism.

1 ea



Lane 1: *Human fibroblast cell lysate (60 µg)*
Lane 2: *Rat brown fat homogenate (60 µg)*
Lane 3: *Rat testis supernatant (60 µg)*

Also Available: *SREBP-2 Blocking Peptide (10009266) 200 µg*

IP & TP Receptor Ligands				
Cat. No.	**Catalog Name**	**Target**	**Mode of Action**	**Effective Concentration**
18230	Beraprost (sodium salt)	IP	agonist	Doses of 20-100 µg are effective in humans
10155	BM 567	TP	antagonist	IC_{50} = 1.1 nM
18210	Carbaprostacyclin	IP	agonist	ED_{50} = 47 nM for inhibition of platelet aggregation
19010	Carbocyclic Thromboxane A_2	TP	agonist	1 nM effectively constricts cat coronary arteries
10005186	CAY10441	IP	antagonist	K_i = 1.5 nM
10005913	CAY10449	IP	antagonist	K_i = 3 nM
18216	Ciprostene (calcium salt)	IP	agonist	ID_{50} = 60 ng/ml for inhibition of ADP-induced platelet aggregation *in vitro*
18215	Iloprost	IP	agonist	K_i = 11 nM (binds with equal affinity to EP_1 receptor)
19021	I-SAP	TP	antagonist	K_d = 0.5 nM (human platelets)
18220	PGI_2	IP	agonist	IC_{50} = 5 nM for inhibition of human platelet aggregation
19020	Pinane Thromboxane A_2	TP	antagonist	IC_{50} = 2 µM for inhibition of U-46619-induced aggregation of human platelets
19025	SQ 29,548	TP	antagonist	K_i = 4.1 nM
16440	U-44069	TP	agonist	EC_{50} = 3 µM for platelet aggregation
16450	U-46619	TP	agonist	EC_{50} = 82 nM for human platelet aggregation

Transcription Factor Agonists & Antagonists				
Cat. No.	**Catalog Name**	**Target**	**Mode of Action**	**Effective Concentration**
10007686	Acetyl Podocarpic Acid Anhydride	LXR	agonist	ED_{50} = 1 nM
60924	Azelaoyl PAF	PPARγ	agonist	~equal to rosiglitazone
10009145	Bezafibrate	pan PPAR	agonist	EC_{50} = 20 - 60 µM
10009017	CAY10514	PPARα and PPARγ	dual agonist	EC_{50} = 0.173 µM (PPARa) EC_{50} = 0.642 µM (PPARg)
89355	22(R)-hydroxy Cholesterol	LXR	agonist	ED_{50} = 325 nM
71730	Ciglitazone	PPARγ	agonist	EC_{50} = 3 µM
10005745	Clofibrate	PPARα	agonist	EC_{50} = 55 µM (human)
10005368	Fenofibrate	PPARα	agonist	EC_{50} = 30 µM (human)
10006798	GW 0742	PPARδ	agonist	EC_{50} = 1.1 nM
10008613	GW 7647	PPARα	agonist	EC_{50} = 6 nM (human)
10011211	GW 9578	PPARα	agonist	EC_{50} = 50 nM (human)
70785	GW 9662	PPARγ	antagonist	blocks differentiation of monocytes to osteoclasts by >90% at a dose of 0.1 µM
10009880	GW 590735	PPARα	agonist	EC_{50} = 4 nM
71740	Rosiglitazone	PPARγ	agonist	K_d = 43 nM
10026	T0070907	PPARγ	antagonist	IC_{50} = 1 nM for inhibition of rosiglitazone binding
71810	T0901317	LXRα and LXRβ	agonist	EC_{50} = 50 nM
71750	Troglitazone	PPARγ	agonist	EC_{50} = 0.55 µM (human)

Tom Brock, Ph.D.

Inflammation in Atherosclerosis

Prostaglandins versus Leukotrienes

Prostaglandins are a diverse group of lipid mediators derived from arachidonic acid by the cyclooxygenase (COX) pathway. Of the two COX isoforms, COX-1 is, in most cases, constitutively expressed, whereas COX-2 is an immediate early gene that is rapidly up-regulated in response to a variety of inflammatory cues. Aspirin and non-steroidal anti-inflammatory drugs (NSAIDs) inhibit both isoforms of COX, with aspirin's effects being irreversible. These inhibitors are effective at inhibiting pain and reducing fever because they inhibit the synthesis of a major COX-2 product, prostaglandin E_2 (PGE_2). However, continued use of these general COX inhibitors has damaging effects on the stomach and kidneys because they inhibit the production of protective PGs by COX-1 at those sites. Selective COX-2 inhibitors, the 'coxibs', were developed to inhibit the inflammatory effects of COX-2 products without affecting the protective effects of the COX-1 PGs.

Both COX-1 and COX-2 convert arachidonic acid to an intermediate, PGH_2, which then must be processed by specific enzymes to produce each type of PG. Surprisingly, activity by the two COX isoforms does not give rise to the same products, as COX-2 tends to generate more prostacyclin (PGI_2) and PGE_2 than COX-1. Perhaps even more surprising are the anti-inflammatory actions shared by these two mediators. PGI_2, through the IP receptor, and PGE_2, through EP_2 and EP_4, activate adenylyl cyclase on leukocytes, elevating cytoplasmic cAMP. The second messenger cAMP activates pathways that inhibit a broad array of leukocyte functions. In platelets, elevated cAMP, as induced by PGI_2, suppresses cell activation and thromboxane synthesis. In monocytes/macrophages, cAMP signalling inhibits cell adherence and migration, scavenger receptor endocytosis, phagocytosis and killing of bacteria, and the synthesis of pro-inflammatory cytokines such as TNF-α and IL-1β. In the context of atherosclerosis, exposure of platelets, monocytes, and macrophages to the COX-2 products, PGI_2 and PGE_2, should be protective.

Leukotrienes (LTs) are made from arachidonic acid by the 5-lipoxygenase (5-LO) pathway. As 5-LO is expressed primarily by leukocytes, these cells are the major producers of LTs. There are two types of LTs, LTB_4 and the cysteinyl LTs, LTC_4, LTD_4, and LTE_4. LTB_4 is recognized as a pro-inflammatory mediator as it attracts and activates a broad array of leukocytes, including monocytes, macrophages,and lymphocytes. The cysteinyl LTs are best known for their roles in allergic responses and asthma, where they modulate epithelial, endothelial, and vascular smooth muscle cells. Less well known are the effects of LTs on gene expression. LTB_4 alters gene expression on leukocytes and other cell types bearing LTB_4 receptors and the cysteinyl LTs modulate gene expression on epithelial, endothelial, and vascular smooth muscle cells, as well as other cells. The effects of LTs on gene expression are diverse and cell specific, leading to an array of changes that promote inflammation, alter growth rate, and drive tissue remodeling.[1]

Genetic studies pointed to a role for the 5-LO pathway in atherosclerosis when, in 2002, the 5-LO gene was identified as a major contributor to atherosclerosis susceptibility in mice.[2] Interest in the role of LTs in atherosclerosis rose in 2003 when large numbers of 5-LO positive cells were detected in human atherosclerotic arteries.[3] The next year, a genome-wide analysis of two independent populations, divided into those having had a myocardial infarction *versus* healthy controls, identified haplotype variants of the 5-LO activating protein, FLAP, as an indicator of susceptibility to cardiovascular disease.[4] Haplotype variants in FLAP were then found to associate with incidence of stroke in another population.[5] Gene expression analysis found that 5-LO expression was higher in "vulnerable", unstable plaques in tissues from patients who had undergone carotid endarterectomy,[6] whereas increased FLAP expression was associated with obesity and insulin resistance.[7] These studies link the 5-LO pathway with inflammatory cardiovascular diseases and have led to studies on the role of LTs in the pathogenesis, as well as the benefits of pharmaceutical intervention.

References

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2. Mehrabian, M., Allayee, H., Wong, J., *et al. Circ. Res.* **91,** 120-126 (2002).
3. Spanbroek, R., Gräbner, R., Lötzer, K., *et al. Proc. Natl. Acad. Sci. USA* **100(3),** 1238-1243 (2003).
4. Helgadottir, A., Manolescu, A., Thorleifsson, G., *et al. Nature Genet.* **36(3),** 233-239 (2004).
5. Helgadottir, A., Gretarsdottir, D., St.Clair, D., *et al. Am. J. Hum. Genet.* **76,** 505-509 (2005).
6. Cipollone, F., Mezzetti, A., Fazia, M.L., *et al. Arterioscler. Thromb. Vasc. Biol.* **25,** 1665-1670 (2005).
7. Kaaman, M., Rydén, M., Axelsson, T., *et al. Int. J. Obes.* **30,** 447-452 (2006).

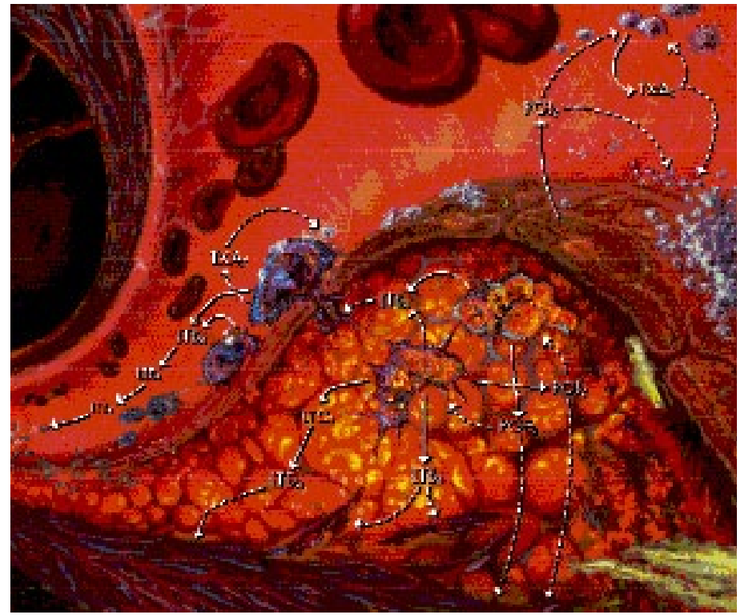
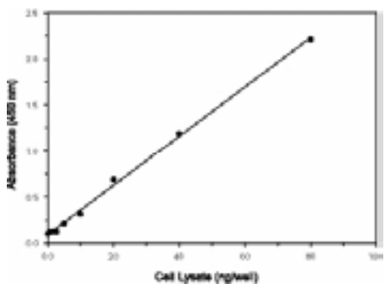


Figure 1. Eicosanoids are important in the development of atherosclerosis. Leukotrienes recruit and activate monocytes, mast cells and T-cells, and also alter gene expression in endothelial and smooth muscle cells, promoting inflammatory signalling. Thromboxane activates platelets, initiating inflammatory and clotting cascades. PGE_2 and PGI_2, synthesized by a variety of cell types, suppresses macrophage activation, reduces endocytosis of LDL and oxLDL, and inhibits inflammatory signalling.

NEW SREBP-2 Transcription Factor Assay Kit 10007819

SREBF-2
Stability: ≥6 months at -20°C
Summary: SREBP-2 is a transcription factor that performs a critical role in the transcriptional regulation of genes involved in cholesterol synthesis and uptake including HMG-CoA synthase, HMG-CoA reductase, and the LDLR. Cayman's SREBP-2 Transcription Factor Assay is a non-radioactive, sensitive method for detecting specific transcription factor DNA binding activity in nuclear extracts and whole cell lysates. A 96-well ELISA replaces the radioactive electrophoretic mobility shift assay (EMSA). A specific double stranded DNA (dsDNA) sequence containing the SREBP response element is immobilized to the wells of a 96-well plate. SREBP contained in a nuclear extract, binds specifically to the SREBP response element. SREBP is detected by addition of specific primary antibody directed against SREBP. A secondary antibody conjugated to HRP is added to provide a sensitive colorimetric readout at 450 nm.

96 wells



NEW SREBP-2 Western Ready Control 10009749

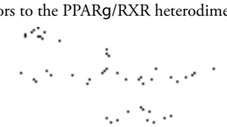
SREBF-2
Purity: 94 kDa (GST-tagged); 68 kDa (native)
Stability: ≥6 months at -20°C
Summary: Source: human recombinant protein expressed in *E. coli* with a N-terminal GST-tag • Application: Positive control for WB • SREBP-2 is transcription factor that plays a critical role in lipid homeostasis by regulating genes involved in cholesterol and fatty acid metabolism.

1 ea

T0070907 10026

[313516-66-4]
MF: $C_{12}H_8ClN_3O_3$ **FW:** 277.7 **Purity:** ≥98%
A crystalline solid **Stability:** ≥1 year at -20°C
Summary: T0070907 is a potent and selective human PPARγ antagonist with an apparent IC_{50} value of 1 nM for the binding inhibition of rosiglitazone. T0070907 covalently binds to Cys313 of PPARγ, inducing conformational changes that block the recruitment of transcriptional cofactors to the PPARγ/RXR heterodimer.

1 mg
5 mg
10 mg
50 mg

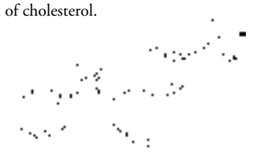


2-chloro-5-nitro-N-4-pyridinyl-benzamide

T0901317 71810

[293754-55-9]
MF: $C_{17}H_{12}F_9NO_3S$ **FW:** 481.3 **Purity:** ≥98%
A crystalline solid **Stability:** ≥1 year at -20°C
Summary: T0901317 is a potent and selective agonist for both LXRα and LXRβ, with an EC_{50} of about 50 nM. T0901317, acting through LXR and in concert with its RXR heterodimerization partner, induces the expression of the ABCA1 reverse cholesterol transporter. This acts to increase the efflux of cholesterol from enterocytes and thus inhibit the overall absorption of cholesterol.

5 mg
10 mg
50 mg
100 mg



N-(2,2,2-trifluoroethyl)-N-[4-[2,2,2-trifluoro-1-hydroxy-1-(trifluoromethyl)ethyl] phenyl]-benzenesulfonamide

NEW TGX-221 10007349

[663619-89-4]
MF: $C_{21}H_{24}N_4O_2$ **FW:** 364.4 **Purity:** ≥98%
A solution in ethanol **Stability:** ≥1 years at -20°C
Summary: TGX-221 is a potent, selective, ATP-competitive inhibitor of PI3-K p110β. TGX-221 inhibits PtdIns-(3,4)-P_2 production in platelets with an IC_{50} value of 50 nM. Selective inhibition of PI3K p110β results in defective platelet thrombus formation and defines PI3K as a target for antithrombotic therapy.

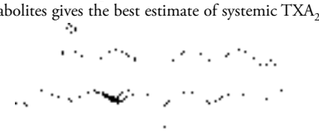
100 µg
500 µg
1 mg
5 mg

7-methyl-2-(4-morpholinyl)-9-[1-(phenylamino)ethyl]-4H-pyrido[1,2-a] pyrimidin-4-one

Thromboxane B_2 19030

[54397-85-2]
MF: $C_{20}H_{34}O_6$ **FW:** 370.5 **Purity:** ≥99%*
A crystalline solid **Stability:** ≥2 years at -20°C
Summary: TXB_2 is a stable, biologically inert metabolite formed from the non-enzymatic hydrolysis of TXA_2, which has a half-life of about 30 seconds. Urinary analysis of TXB_2 accurately reflects intrarenal TXA_2 synthesis, while measurement of 11-dehydro and 2,3-dinor TX metabolites gives the best estimate of systemic TXA_2 secretion.

1 mg
5 mg
10 mg



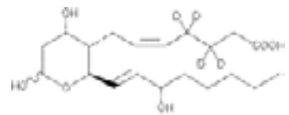
9α,11,15S-trihydroxythromba-5Z,13E-dien-1-oic acid

**All 5-cis 2-series PGs (those containing a 5,6-double bond) will contain a small amount of the 5-trans isomer. This isomer is generally undetectable using normal phase silica columns and plates, but may be resolved using RP-HPLC. The purity for all such 2-series PGs excludes the 1-3% trans isomer which will generally be present.*

Thromboxane B_2-d_4 319030

MF: $C_{20}H_{30}D_4O_6$ **FW:** 374.5 **Chemical Purity:** ≥98%*
Deuterium Incorporation: ≤1% d_0
A solution in methyl acetate **Stability:** ≥1 year at -20°C
Summary: TXB_2-d_4 contains four deuterium atoms at the 3, 3', 4, and 4' positions. It is intended for use as an internal standard for the quantification of TXB_2 by GC- or LC-MS.

25 µg
50 µg
100 µg
500 µg

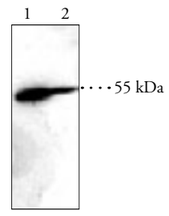


9α,11,15S-trihydroxy-thromba-5Z,13E-dien-1-oic-3,3,4,4-d_4 acid

Thromboxane B_2 11-dehydrogenase Polyclonal Antiserum 160720

100 µl lyophilized antiserum **Stability:** ≥3 years at -20°C
Summary: Antigen: human erythrocyte TXB_2 11-dehydrogenase • Host: rabbit • Cross-reactivity: (+) human erythrocyte, porcine liver, and ovine liver TXB_2 11-dehydrogenase • Application: WB; other applications not tested • TXB_2 11-dehydrogenase catalyzes the conversion of TXB_2 to 11-dehydro TXB_2.

1 ea



Lane 1: *Porcine liver homogenate 10,000 x g supernatant (30 µg)*
Lane 2: *Ovine liver homogenate 10,000 x g supernatant (30 µg)*

Thromboxane B_2 EIA Kit 519031

Stability: ≥1 year at -20°C
Summary: TXA_2 is produced from arachidonic acid by many cells and causes irreversible platelet aggregation and vascular and bronchial smooth muscle contraction. TXA_2 is rapidly hydrolyzed non-enzymatically to form TXB_2, which is then quickly metabolized ($t_{1/2}$ = 5-7 minutes) to urinary metabolites for clearance by the kidneys. Because of the transient nature of this compound it is difficult to accurately measure circulating levels in whole-animal experimental models. In fact, it has been shown that plasma and urine levels of TXB_2 are primarily due to *ex vivo* platelet activation and intra-renal production, respectively. Therefore, measurement of TXB_2 metabolites such as 11-dehydro TXB_2 (Catalog No. 519501) and 2,3-dinor TXB_2 (Catalog No. 519051) in urine and plasma may give better estimates of *in vivo* TXA_2 production. TXB_2 measurement is better suited towards samples that are not expected to undergo extensive metabolism such as perfusates, lavage samples, and tissue/cell culture medium or lysates.

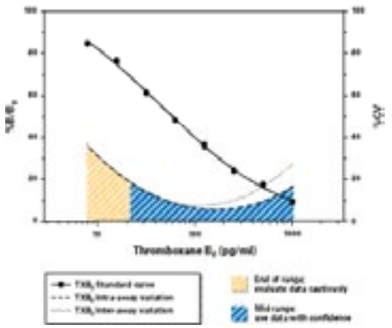
Sensitivity: 50% B/B_0: 57 pg/ml
80% B/B_0: 11 pg/ml

Specificity:

Thromboxane B_2	100%
Thromboxane B_3	200%
2,3-dinor Thromboxane B_2	9.9%
11-dehydro Thromboxane B_3	0.62%
Prostaglandin D_2	0.53%
11-dehydro Thromboxane B_2	0.42%
Prostaglandin $F_{2\alpha}$	0.25%
Prostaglandin $F_{1\alpha}$	0.11%
Prostaglandin E_2	0.09%
6-keto Prostaglandin $F_{1\alpha}$	0.08%
Leukotriene B_4	<0.01%
tetranor-PGEM	<0.01%
tetranor-PGFM	<0.01%
13,14-dihydro-15-keto Prostaglandin $F_{2\alpha}$	<0.01%

96 wells
480 wells

Also Available: *Thromboxane B_2 EIA Kit (Solid Plate) (519031.1)*



**All 5-cis 2-series PGs (those containing a 5,6-double bond) will contain a small amount of the 5-trans isomer. This isomer is generally undetectable using normal phase silica columns and plates, but may be resolved using RP-HPLC. The purity for all such 2-series PGs excludes the 1-3% trans isomer which will generally be present.*

NEW Thromboxane B_2 Express EIA Kit - Monoclonal 10004023

Stability: ≥1 year at -20°C

Summary: TXA_2 is produced from arachidonic acid by many cells and causes irreversible platelet aggregation and contraction of vascular and bronchial smooth muscle. TXA_2 is rapidly hydrolyzed non-enzymatically to TXB_2, which is then quickly metabolized to urinary metabolites for clearance by the kidneys. Urinary analysis of TXB_2 accurately reflects intrarenal TXA_2 synthesis, while measurement of 11-dehydro and 2,3-dinor TX metabolites gives the best estimate of systemic TXA_2 secretion. Cayman's TXB_2 Express EIA is a competitive assay that provides accurate measurements of TXB_2 from a variety of sample types. As the name implies, this kit was designed for rapid measurements of TXB_2.

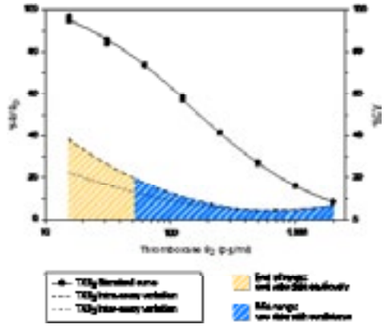
Sensitivity: 50% B/B_0: 176 pg/ml
80% B/B_0: 45 pg/ml

Specificity:

Thromboxane B_2	100%
Thromboxane B_3	10.1%
2,3-dinor Thromboxane B_2	7.9%
Prostaglandin $F_{1\alpha}$	5.6%
Prostaglandin D_2	3.1%
Prostaglandin $F_{2\alpha}$	2.2%
6-keto Prostaglandin $F_{1\alpha}$	0.74%
Prostaglandin E_2	0.72%
2,3-dinor-6-keto Prostaglandin $F_{1\alpha}$	0.04%
11-dehydro Thromboxane B_2	0.04%
11-dehydro Thromboxane B_3	0.01%
Leukotriene B_4	<0.01%
tetranor-PGEM	<0.01%
tetranor-PGFM	<0.01%
13,14-dihydro-15-keto Prostaglandin $F_{2\alpha}$	<0.01%

96 wells
480 wells

Also Available: Thromboxane B_2 Express EIA Kit (Solid Plate) (10005386)



11-dehydro Thromboxane B_2 19500

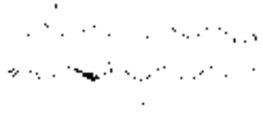
[67910-12-7]11-keto TXB_2

MF: $C_{20}H_{32}O_6$ **FW:** 368.5 **Purity:** ≥98%*

A solution in methyl acetate **Stability:** ≥1 year at -20°C

Summary: TXB_2 is released in substantial quantities from aggregating platelets and metabolized during circulation to 11-dehydro TXB_2 and 2,3-dinor TXB_2. 11-dehydro TXB_2 is one of the main plasma metabolites of TXB_2 and can be used as a marker for *in vivo* TXA_2 synthesis. The mean plasma level in human males is 0.9-4.3 pg/ml and the half life is 45-60 minutes. Urinary concentrations of 11-dehydro TXB_2 are approximately 30-70 ng/mmole creatinine.

1 mg
5 mg
10 mg
25 mg



9a,15S-dihydroxy-11-oxothromba-5Z,13E-dien-1-oic acid

11-dehydro Thromboxane B_2-d_4 319500

11-keto TXB_2-d_4

MF: $C_{20}H_{28}D_4O_6$ **FW:** 372.5 **Chemical Purity:** ≥99%*

Deuterium Incorporation: ≤1% d_0

A solution in methyl acetate **Stability:** ≥1 year at -20°C

Summary: 11-dehydro TXB_2-d_4 contains four deuterium atoms at the 3, 3', 4, and 4' positions. It is intended for use as an internal standard for the quantification of 11-dehydro TXB_2 by GC- or LC-MS.

25 µg
50 µg
100 µg
500 µg

9a,15S-dihydroxy-11-oxothromba-5Z,13E-dien-1-oic-3,3,4,4-d_4 acid

11-dehydro Thromboxane B_2 EIA Kit 519501

Stability: ≥1 year at -20°C

Summary: TXA_2 is produced from arachidonic acid by many cells and causes irreversible platelet aggregation and vascular and bronchial smooth muscle contraction. TXA_2 is rapidly hydrolyzed non-enzymatically to form TXB_2. Although it is common to estimate TXA_2 levels by measuring TXB_2, most of the TXB_2 measured in plasma or urine is due to *ex vivo* platelet activation or intra-renal production, respectively. Measurement errors are compounded by the fact that normal concentrations of circulating TXB_2 are extremely low (1-2 pg/ml), and highly transient ($t_{1/2}$ = 5-7 minutes). To circumvent this problem, it is necessary to measure a metabolite that cannot be formed by platelets or by the kidney. TXB_2 can be metabolized by 11-hydroxy TX dehydrogenase to form 11-dehydro TXB_2, or by b-oxidation to form 2,3-dinor TXB_2. Infusion studies using TXB_2 have shown that both metabolites are formed equally, although 11-dehydro TXB_2 has a longer circulating half-life ($t_{1/2}$ = 45 minutes). Therefore, measurement of 11-dehydro TXB_2 in plasma or urine will give a time-integrated indication of TXA_2 production.

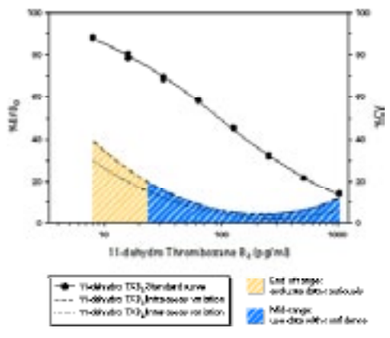
Sensitivity: 50% B/B_0: 93 pg/ml
80% B/B_0: 16 pg/ml

Specificity:

11-dehydro Thromboxane B_2	100%
11-dehydro-2,3-dinor Thromboxane	11.36%
Prostaglandin D_2	0.03%
Thromboxane B_2	<0.01%
Leukotriene B_4	<0.01%
tetranor-PGEM	<0.01%
tetranor-PGFM	<0.01%
Prostaglandin E_2	<0.01%
6-keto Prostaglandin $F_{1\alpha}$	<0.01%
2,3-dinor Thromboxane B_2	<0.01%

96 wells
480 wells

Also Available: 11-dehydro Thromboxane B_2 EIA Kit (Solid Plate) (519501.1)



2,3-dinor Thromboxane B_2 EIA Kit 519051

Stability: ≥1 year at -20°C

Summary: TXA_2 is produced from arachidonic acid by many cells and causes irreversible platelet aggregation and vascular and bronchial smooth muscle contraction. TXA_2 is rapidly hydrolyzed non-enzymatically to form TXB_2. Although it is common to estimate TXA_2 levels by measuring TXB_2, most of the TXB_2 measured is due to *ex vivo* platelet activation or intra-renal production. Measurement errors are compounded by the fact that normal concentrations of circulating TXB_2 are extremely low (1-2 pg/ml), and highly transient ($t_{1/2}$ = 5-7 minutes). To circumvent this problem, it is necessary to measure a metabolite that cannot be formed by platelets or by the kidney. TXB_2 may be metabolized by 11-hydroxy TX dehydrogenase to form 11-dehydro TXB_2, or by b-oxidation to form 2,3-dinor TXB_2. Infusion studies using TXB_2 have shown that both metabolites are formed equally, but that the circulating half-life of 2,3-dinor TXB_2 is shorter ($t_{1/2}$ = 15 minutes). Therefore, measurement of 2,3-dinor TXB_2 will give a more episodic indication of TXA_2 production.

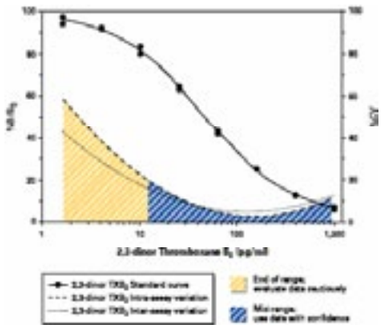
Sensitivity: 50% B/B_0: 45 pg/ml
80% B/B_0: 11 pg/ml

Specificity:

2,3-dinor Thromboxane B_2	100%
Thromboxane B_2	100%
2,3-dinor Thromboxane B_1	3.0%
Prostaglandin D_2	2.0%
11-dehydro Thromboxane B_2	1.5%
Prostaglandin $F_{2\alpha}$	1.0%
Prostaglandin $F_{1\alpha}$	0.24%
6-keto Prostaglandin $F_{1\alpha}$	0.06%
2,3-dinor-6-keto Prostaglandin $F_{1\alpha}$	0.05%
Prostaglandin E_2	0.04%
13,14-dihydro-15-keto Prostaglandin $F_{2\alpha}$	<0.01%
tetranor-PGEM	<0.01%
tetranor-PGFM	<0.01%

96 wells
480 wells

Also Available: 2,3-dinor Thromboxane B_2 EIA Kit (Solid Plate) (519051.1)



Thromboxane B_3 19990

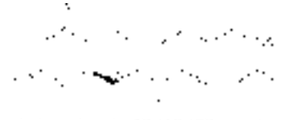
[71953-80-5] Δ^{17}-TXB_2

MF: $C_{20}H_{32}O_6$ **FW:** 372.5 **Purity:** ≥98%*

A solution in methyl acetate **Stability:** ≥2 years at -20°C

Summary: TXB_3 is the stable hydrolysis product of TXA_3 synthesized from EPA by COX and TX synthase. It is biosynthesized in various tissues such as seminal vesicles, lung, PMNL, and ocular tissues.

50 µg
100 µg
500 µg
1 mg



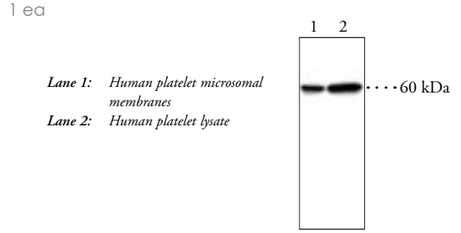
9a,11,15S-trihydroxy-thromba-5Z,13E,17Z-trien-1-oic acid

Thromboxane Synthase Polyclonal Antibody 160715

Peptide affinity-purified IgG **Stability:** ≥1 year at -20°C

Summary: Antigen: human TX synthase amino acids 359-377 • Host: rabbit • Cross-reactivity: (+) human, porcine, murine, and rat TX synthases • Applications: WB and IHC; other applications not tested • TX synthase catalyzes the conversion of PGH_2 to TXA_2, which is a potent vasoconstrictor and inducer of platelet aggregation.

1 ea



Also Available: *Thromboxane Synthase Blocking Peptide (360715)* *200 µg*

TOFA 10005263

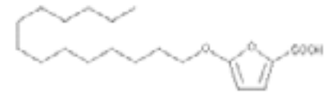
[54857-86-2] RMI 14514, 5-(Tetradecyloxy)-2-furoic acid

MF: $C_{19}H_{32}O_4$ **FW:** 324.5 **Purity:** ≥98%

A crystalline solid **Stability:** ≥2 years at -20°C

Summary: TOFA is an inhibitor of fatty acid synthesis that blocks the synthesis of malonyl-CoA by acetyl-CoA carboxylase (ACC). TOFA (at about 1 µg/ml) is effective at blocking the incorporation of radiolabeled acetate into palmitate. However, TOFA reduces malonyl-CoA levels rather than elevating them, and TOFA is relatively non-toxic to various cancer cell lines. TOFA also attenuates the inhibition of feeding observed when FAS inhibitors such as cerulenin and C75 are administered to obese *ob/ob* mice.

5 mg
10 mg
50 mg
100 mg



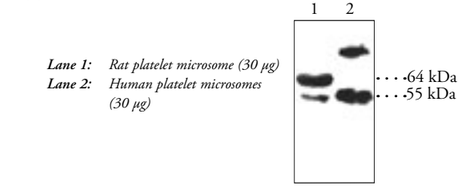
5-(tetradecyloxy)-2-furancarboxylic acid

NEW TP Receptor (human) Polyclonal Antibody 10004452

Peptide affinity-purified IgG **Stability:** ≥1 year at -20°C

Summary: Antigen: human TP receptor C-terminal amino acids 323-343 • Host: rabbit • Cross-reactivity: (+) human, rat, and Cos-7 (African green monkey) TP receptors; other species not tested • Applications: WB and ICC • The TP receptor is a GPCR that mediates the action of TXA_2.

1 ea



Also Available: *TP Receptor Blocking Peptide (10009368)* *200 µg*

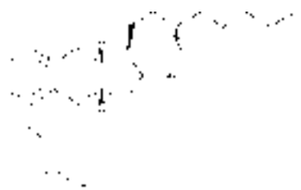
**All 5-cis 2-series PGs (those containing a 5,6-double bond) will contain a small amount of the 5-trans isomer. This isomer is generally undetectable using normal phase silica columns and plates, but may be resolved using RP-HPLC. The purity for all such 2-series PGs excludes the 1-3% trans isomer which will generally be present.*

**All 5-cis 2-series PGs (those containing a 5,6-double bond) will contain a small amount of the 5-trans isomer. This isomer is generally undetectable using normal phase silica columns and plates, but may be resolved using RP-HPLC. The purity for all such 2-series PGs excludes the 1-3% trans isomer which will generally be present.*

NEW Treprostinil 10162

[81846-19-7]
MF: $C_{23}H_{34}O_5$ **FW:** 390.5 **Purity:** ≥98%
A crystalline solid **Stability:** ≥1 year at -20°C
Summary: Treprostinil is a stable analog of prostacyclin that is used clinically for the treatment of primary pulmonary hypertension (PPH) under the trade name Remodulin®. The structural modifications in treprostinil compared to prostacyclin increase the plasma half-life from two minutes to 34 and 85 minutes for intravenous and subcutaneous infusion of the drug, respectively. In addition to treprostinil's direct vasodilatory effects, it also inhibits inflammatory cytokine (TNF-a, IL-1b, IL-6, GM-CF) production by human alveolar macrophages in the sub-micromolar range by preventing NF-kB translocation to the nucleus.

1 mg
5 mg
10 mg
50 mg

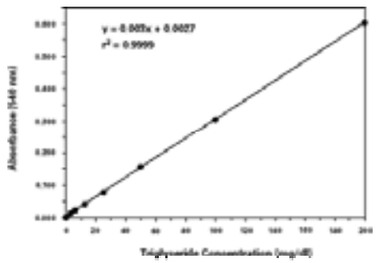


[[(1R,2R,3aS,9aS)-2,3,4,9,9a-hexahydro-2-hydroxy-1-[(3S)-3-hydroxyoctyl]-1H-benz[f]inden-5-yl]oxy]acetic acid

NEW Triglyceride Assay Kit 10010303

TG
Stability: ≥6 months at -20°C
Summary: The measurement of TG levels, in conjunction with other lipid assays, are useful in the diagnosis of primary and secondary hyperlipoproteinemia, dyslipidemia, and triglyceridemia. Cayman's TG Assay Kit provides a simple, reproducible, and sensitive tool for assaying TGs in plasma and serum. The assay is initiated with the enzymatic hydrolysis of the TGs by lipase to produce glycerol and free fatty acids. The glycerol released is subsequently measured by a coupled enzymatic reaction system with a colorimetric readout at 540 nm.

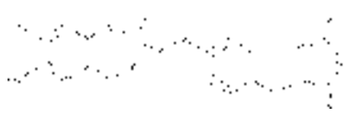
96 wells



Troglitazone 71750

[97322-87-7] Resulin™
MF: $C_{24}H_{27}NO_5S$ **FW:** 441.5 **Purity:** ≥98%
A crystalline solid **Stability:** ≥1 year at -20°C
Summary: Troglitazone is a potent and selective PPARg agonist. The EC_{50} values for transactivation of human and murine PPARg in a cell-based assay are 0.55 and 0.78 µM, respectively. In the same assay system, no activation of PPARa and PPARd was observed at concentrations up to 10 µM.

5 mg
10 mg
50 mg
100 mg



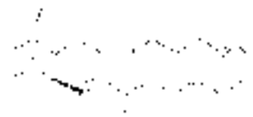
5-[[4-[(3,4-dihydro-6-hydroxy-2,5,7,8-tetramethyl-2H-1-benzopyran-2-yl)methoxy]phenyl]methyl]-2,4-thioazolidinedione

**All 5-cis 2-series PGs (those containing a 5,6-double bond) will contain a small amount of the 5-trans isomer. This isomer is generally undetectable using normal phase silica columns and plates, but may be resolved using RP-HPLC. The purity for all such 2-series PGs excludes the 1-3% trans isomer which will generally be present.*

U-44069 16440

[56985-32-1] 9,11-epoxymethano PGH_2, 9,11-dideoxy-9a,11a-epoxymethano PGF_{2a}
MF: $C_{21}H_{34}O_4$ **FW:** 350.5 **Purity:** ≥98%*
A solution in methyl acetate **Stability:** ≥2 years at -20°C
Summary: U-44069 is a stable analog of the endoperoxide PGH_2, and a TP receptor agonist. It stimulates shape change in human platelets without a measurable increase in $[Ca^{2+}]$ with an EC_{50} value of 1.8 nM. U-44069 has an EC_{50} value of 3 µM and 54 nM for platelet aggregation and phosphatidate formation in human platelets, respectively.

1 mg
5 mg
10 mg
50 mg

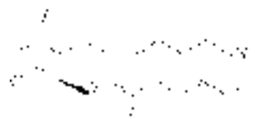


9,11-dideoxy-9a,11a-epoxymethano-prosta-5Z,13E-dien-1-oic acid

U-46619 16450

[56985-40-1] 9,11-dideoxy-9a,11a-methanoepoxy PGF_{2a}
MF: $C_{21}H_{34}O_4$ **FW:** 350.5 **Purity:** ≥98%*
A solution in methyl acetate **Stability:** ≥2 years at -20°C
Summary: U-46619 is a stable analog of the endoperoxide PGH_2, and a TP receptor agonist. It exhibits properties similar to TXA_2, causing platelet shape change and aggregation, and contraction of vascular smooth muscle. Mean EC_{50} values for shape change in human, rat, and rabbit platelets are 4.8, 6.0, and 7.3 nM respectively, and for aggregation are 82, 145, and 65 nM, respectively.

1 mg
5 mg
10 mg
50 mg

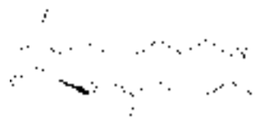


9,11-dideoxy-9a,11a-methanoepoxy-prosta-5Z,13E-dien-1-oic acid

Δ^{17}-U-46619 16460

MF: $C_{21}H_{32}O_4$ **FW:** 348.5 **Purity:** ≥98%*
A solution in methyl acetate **Stability:** ≥2 years at -20°C
Summary: D^{17}-U-46619 is the first direct, stable analog of TXA_3 ever synthesized. As TXA_3 is a metabolite of EPA, D^{17}-U-46619 can be used to examine the effects w-3 fatty acids might have at the receptor level, particularly the TP and IP receptors.

50 µg
100 µg
500 µg
1 mg

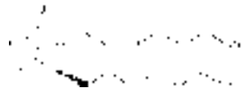


9,11-dideoxy-9a,11a-methanoepoxy-prosta-5Z,13E,17Z-trien-1-oic acid

U-51605 16465

[64192-56-9]
MF: $C_{20}H_{32}N_2O_2$ **FW:** 332.5 **Purity:** ≥98%*
A solution in methyl acetate **Stability:** ≥1 year at -20°C
Summary: U-51605 is a stable analog of the endoperoxide PGH_2. It is an inhibitor of both PGI and TX synthases with more selectivity towards PGI synthase. In human foreskin fibroblasts, U-51605 inhibits PGI synthase at a concentration of 2.8 µM, whereas, human platelet TX synthase is inhibited at a concentration of 5.6 µM. U-51605 (0.1 µg/ml) also inhibits PGH_2-induced human platelet aggregation.

500 µg
1 mg
5 mg
10 mg



9a,11a-azoprosta-5Z,13E-dien-1-oic acid

NEW U-18666A 10009085

[3039-71-2]
MF: $C_{25}H_{41}NO_2$ • HCl **FW:** 424.1 **Purity:** ≥95%
A crystalline solid **Stability:** ≥2 years at -20°C
Summary: U-18666A is a cell permeable drug that inhibits cholesterol trafficking. It inhibits cholesterol transport from late endosomes/lysosomes to the ER, but not cholesterol transport to the plasma membrane as demonstrated in many cell types including macrophages, primary cortical neurons and primary fibroblasts. In macrophages, micromolar concentrations of U-18666A inhibit multiple pathways of cholesterol trafficking from late endosomes, whereas nanomolar concentrations impair cholesterol trafficking to the ER, a response similar to that found in Neimann-Pick disease type C (NPC). U-18666A inhibits oxidosqualene cyclase at high (>0.5 mM) concentrations and oral doses (10 mg/kg) induces cataracts in rats.

5 mg
10 mg
25 mg
50 mg

3β-[2-(diethylamino)ethoxy]-androst-5-en-17-one, monohydrochloride

Vasoactive Eicosanoid HPLC Mixture 10003

Purity: ≥98% for each compound
A solution in methyl acetate **Stability:** ≥6 months at -20°C
Summary: This mixture contains the characteristic metabolites of both PGI_2 and TXA_2. Contents: TXB_2, 11-dehydro TXB_2, 6-keto PGF_{1a}, 2,3-dinor-6-keto PGF_{1a} (100 µg each), and 12(S)-HHTrE (5 µg).

1 ea

Wy 14643 70730

[50892-23-4] Pirinixic acid
MF: $C_{14}H_{14}ClN_3O_2S$ **FW:** 323.8 **Purity:** ≥98%
A crystalline solid **Stability:** ≥2 yearss at -20°C
Summary: Wy 14643 is a PPAR activator. Although this compound is primarily an activator of PPARa, it activates PPARg as well. The potency of Wy 14643 as an activator of PPARa is species dependent, with receptor activation occurring at concentrations as low as 0.1 µM in the mouse compared to 10 µM in *Xenopus*.

5 mg
10 mg
50 mg
250 mg

[[4-chloro-6-[(2,3-dimethylphenyl)amino]-2-pyrimidinyl]thio]-acetic acid

Alphabetical Index

Catalog Number Index