Wako Product Update

No.1

ORGANIC CHEMISTRY
GREEN CHEMISTRY

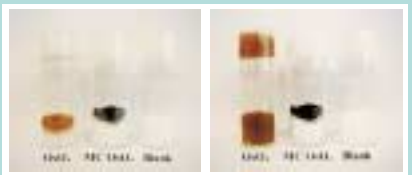
BIO CHEMISTRY

ANALYTICAL CHEMISTRY

2000

Green Chemistry (See p.1)

Osmium (VIII) Oxide, Microencapsulated

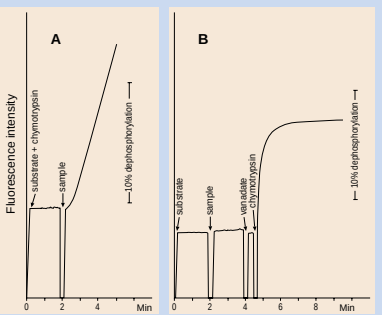


[Before] [After 3 Days]

Low Toxicity due to Low Volatility

Quenched Fluorescence Substrate Assay of Protein Tyrosine Phosphatase (PTP) Activity (See p.20)

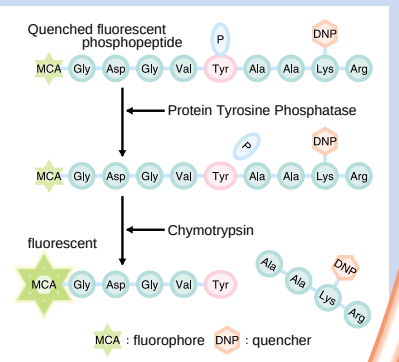
Fluorospark™ PTP Assay Kit



Kinetic experiment Endpoint experiment

Measurement of PTP activity in cytoplasmic fraction of osteoblast like cell line (Data was provided by Dept. of Dental Pharmacology, Hokkaido Univ. School of Dentistry (Japan))

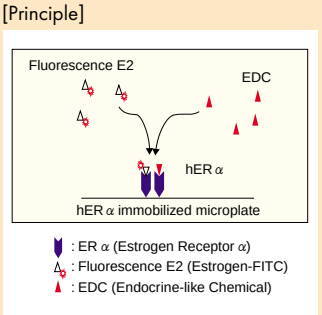
[Principle]



Endocrine Disrupter Analysis (See p.28)

Estrogen-R (α) Competitor Screening Kit

[Principle]



Wako

Index

1. Green Chemistry

A. Microencapsulated Catalysts

[Features]

- Readily recoverable and reusable by filtration
- High catalytic activity
- Utilizing patented technology that reduces release of catalyst from resin
- Environmentally friendly

Osmium (VIII) Oxide, Microencapsulated

153-02081 1g

RT, Solid

MW : 254.23 (OsO_4)

CAS : 20816-12-0

Appearance:Black mass

bp : 131℃

mp: 40-43℃

Flash point : 4℃

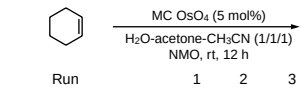
Specific gravity : 5.10

OsO_4 content : approx. 10%

[Before] [After 3 Days]

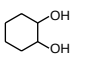
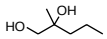
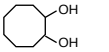
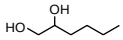
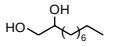
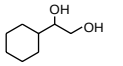
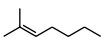
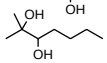
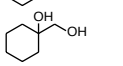
Low Toxicity due to Low Volatility

Recovery and reuse of MC OsO_4



Run	1	2	3	4	5
Yield of Product (%)	84	84	83	84	83
Recovery of Catalyst (%)	quant.	quant.	quant.	quant.	quant.

Dihydroxylation of olefins using MC OsO_4[a]

Olefin	Product	Yield (%)	Olefin	Product	Yield (%)
		84			78
		81			74
		89			76
		68			63
		83			83[b]
		84			

[a]All reaction were carried out using MC OsO_4 (5 mol%) and NMO in H_2O-acetone-CH_3CN (1/1/1) at rt for 6-48 h. [b]Carried out at 60℃.

Ref.: Nagayama, S., *et al., J. Org. Chem.*, **63**, 6094 (1998)

Scandium Trifluoromethanesulfonate, Microencapsulated

196-12041 1g

RT, Solid

CAS : 144026-79-9

Appearance : White mass

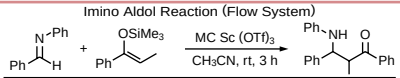
$Sc(OTf)_3$ Content: approx. 10%

[Additional Features]

1. Even higher activity than that of its stand-alone counterpart
2. Usable in both batch and flow systems
3. Stable even in water and thus very versatile.

[Reaction 1]

Imino Aldol Reaction (Flow System)

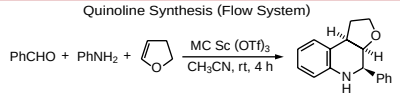


Use[a]	1	2	3	4	5	6	7
Yield/%	90	90	88	89	89	88	90

[a]Recevered catalyst was used successively (Use 2,3,4....)

[Reaction 2]

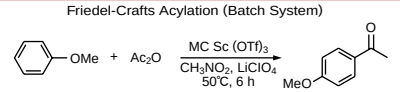
Quinoline Synthesis (Flow System)



1st use, 68% yield ; 2nd use, 69% yield ; 3rd use, 69% yield

[Reaction 3]

Friedel-Crafts Acylation (Batch System)



1st use, 76% yield ; 2nd use, 76% yield ; 3rd use, 81% yield

[Other reactions]

① Aza Diels-Alder reaction

② Cyanation reaction

③ Allylation reaction of Imine

④ Mannich-type reaction

⑤ Strecker reaction

⑥ Aldol reaction

⑦ Michael reaction

⑧ Cyanation reaction of aldehyde

⑨ Allylation reaction of aldehyde

⑩ Diels-Alder reaction

Ref.: Kobayashi, S., *et al., J. Am. Chem. Soc.*, **120**, 2985-2986 (1998)

B. Amphiphilic Resin-Supported Pd-Phosphine Catalyst

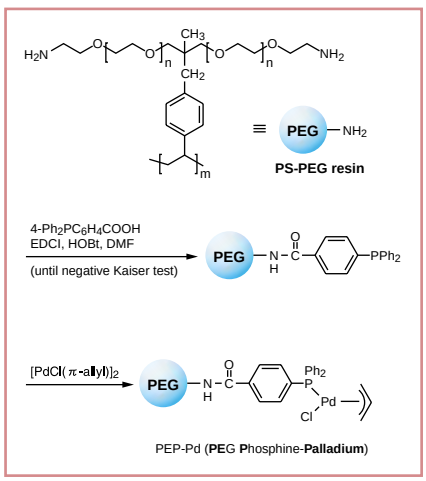
[Features]

- In water, amphiphilic resin-supported Pd-phosphine complex catalyzed the following reactions.
  (1) Allylic Substitution Reaction
  (2) Hydrocarbonylation of Aryl Halides
  (3) Cross-Coupling of Aryl Halides and Allyl Acetates with Arylboron reagents
- Readily recoverable and reusable by filtration
- High catalytic activity
- Environmentally friendly

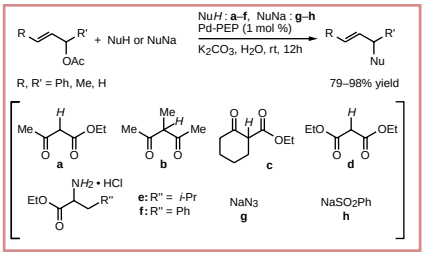
Di-μ-chlorobis[(η-allyl) palladium (II)], Supported PEG-PS Resin

043-27731 500mg

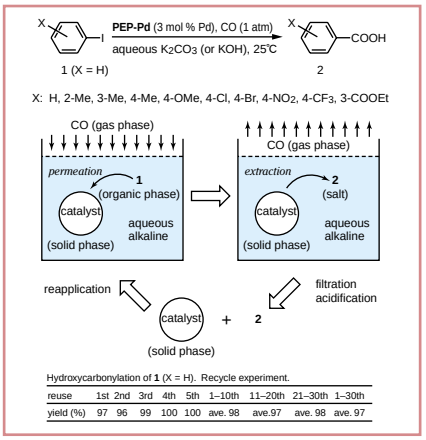
RT, Solid



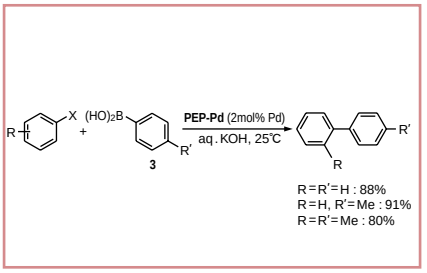
Preparation of amphiphilic resin-supported phosphine-palladium complex[3]

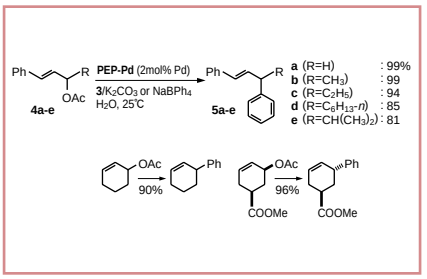


High catalytic activity of PEP-Pd in the allylic substitution in water[1]



Hydroxycarbonylation of aryl halides in water catalyzed by PEP-Pd[2]





Cross-coupling of aryl halides and ally acetates with arylboron reagents in water catalyzed by PEP-Pd[3]

Ref.:

(1) Allylic substitution: (a)Uozumi, Y., Danjo, H., and Hayashi, T., *Tetrahedron Lett.*, **38**, 3557-3560 (1997), (b)Uozumi, Y., *et al.*, *Tetrahedron Lett.*, **39**, 8303-8306 (1998), (c)Danjo, H., *et al.*, *Tetrahedron*, **55**, 14341-14352 (1999).

(2) Hydroxycarbonylation: Uozumi, Y., Watanabe, T., *J. Org. Chem.*, **64**, 6921-6923 (1999).

(3) Cross-coupling: Uozumi, Y., *et al.*, *J. Org. Chem.*, **64**, 3384-3388 (1999).

2. CFC - Alternatives

Non-ozone-depleting fluorinated solvents were developed as Chlorofluorocarbon (CFC) -alternatives.
Global warming potential is low. We offer two mixtures of *n*- and *iso*-butyl isomers, 99.0+% (cGC)

[Features]

- Water-repellent
- Easily soluble in various organic solvents

Ethyl Nonafluorobutyl Ether (mixture of isomers), 99.0+% (cGC)

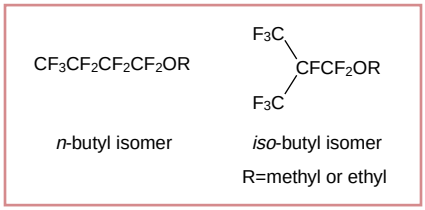
051-06652 25mL
055-06655 500mL

RT, Liquid
M.W.: 264.09 ($C_6H_5F_9O$)

Methyl Nonafluorobutyl Ether (mixture of Isomers), 99.0+% (cGC)

139-13412 25mL
133-13415 500mL

RT, Liquid
M.W.: 250.06 ($C_5H_3F_9O$)



Solubility in various organic solvents at 25℃

	Solvent					
	Methanol	1-Butanol	Hexane	Dodecane	Diethylether	Acetone
Ethyl Nonafluorobutyl Ether	○	○	○	○	○	○
Methyl Nonafluorobutyl Ether	○	16.8 (w/w%)	○	5.9 (w/w%)	○	○

○ : Very soluble in the solvent.

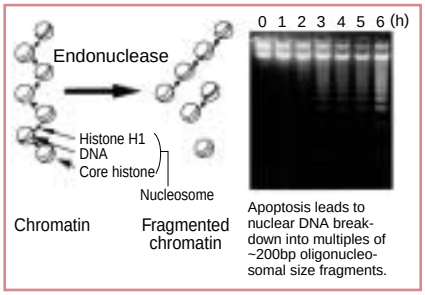
1. Apoptosis

A. Kit

Apoptosis Ladder Detection Kit

wako

291-53204 24 lanes
297-53201 96 lanes
2-10℃



[Features]

1. High Sensitivity
   At least 10^3 apoptotic cells can be detected in cells and tissues.
2. Speedy Measurement
   The kit involves about two and half hours, from DNA extraction to agarose gel analysis and fluorescent staining with SYBR™ Green I.
3. Simple and Highly Reproducible
   After mixing with Loading Buffer, the recovered DNA can be readily applied to the gel slot of the Agarose Gel, provided.
4. Clear Image of DNA Ladder
   DNA is extracted by our own unique method, independent of any proteins or lipids contained in the cells.
5. Non-Hazardous
   No deleterious solvents, such as phenol and chloroform, are used.

[Contents]

1. Enzyme Reaction Solution
2. RNase
3. Enzyme Activator
4. Protein Digestion Enzyme
5. DNA Extraction Solution
6. TE Buffer
7. Agarose Gel
8. Loading Buffer
9. Ladder Marker (123bp)
10. SYBR™ Green I*

*: This reagent is licensed and provided for specific use as a kit component by Molecular Probes, Inc, Oregon, USA.

B. Antibodies

New antibodies specific for the cleavage site of Caspase-3

Anti Human Activated Caspase-3 (CPP32), MAb (Clone: CS-3)

015-18121 1mL
-20℃, D/I, Liquid

Cell culture supernatant, containing no stabilizers and preservatives.
Isotype : IgG_1
Reacts with p10 subunit of human activated caspase-3, but not with human caspase-3 proenzyme.
Working Dilution :
Westernblot (chemiluminescence) [1:50 ~ 1:150],
Immunofluorescence [1:10 ~ 1:20]
Ref.: Kamada, S., Lee, J.-H. and Tsujimoto, Y., *in preparation.*

Anti Human Activated Caspase-3, Rabbit

010-17331 100μL
-20℃, D/I, Liquid

Purified by antigen-affinity chromatography from the antisera and prepared in PBS solution. Contains no stabilizers and preservatives.
Isotype : IgG_1
Reacts with p10 subunit of human activated caspase-3, but not with human caspase-3 proenzyme.
Working Dilution :
Westernblot (chemiluminescence) [1:100-],
Immunofluorescence [1:50-]
Ref.: Kamada, S., Lee, J.-H. and Tsujimoto, Y., *in preparation.*

Anti Human Fas, MAb (Clone: APO1-3)

010-16351 100μg (1mL)
2-10℃, Liquid

Purified by Protein A affinity chromatography from culture supernatant and prepared in PBS solution, containing 1% BSA as a stabilizer.
Isotype : IgG_3
Specifically recognizes human Fas. Cross-reactivities have not been determined.
Applications : Flow Cytometry, Westernblot
Functional Activities : Induces apoptosis.

Anti Human Fas, MAb (Clone: SM1/1)

013-16341 100μg (1mL)
2-10℃, Liquid

Purified by Protein A affinity chromatography from culture supernatant and prepared in PBS solution, containing 1% BSA as a stabilizer.
Isotype : IgG_{2a}
Specific to human Fas. Cross-reactivities have not been determined.
Applications :
Flow Cytometry, Westernblot [1 ~ 10μg/mL], Immunohistochemistry (Frozen sections) [1 ~ 10μg/mL]
Functional Activities :
Induces apoptosis at 100-500ng/mL in JURKAT cells and SKW6.4 cells if secondary crosslinking with anti mouse IgG is used. Induces apoptosis in human Fas-transfectants without cross-linking.
Ref.: Trauth, B.C., *et al., Science*, **245**, 301 (1989)/Friesen, C., *Nature Medicine*, **2**, 574 (1996).

Anti Human Fas, MAb (SM1/23)

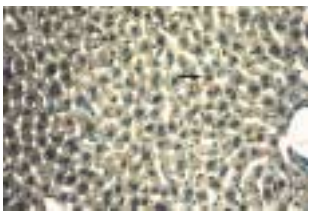
017-16361 100μg (1mL)
2-10℃, Liquid

Purified by Protein A affinity chromatography from culture supernatant and prepared in PBS solution, containing 1% BSA as a stabilizer.
Isotype : IgG_{2b}
Specific to human Fas. Cross-reactivities have not been determined.

Applications:
Flow Cytometry, Westernblot [1～10μg/mL], Immunohistochemistry (Frozen sections) [1～10μg/mL]
Functional Activities :
Blocks induction of apoptosis by clone SM1/1.

Anti Human Fas, Rabbit
019-16181 100μL
−20℃, Liquid
Antiserum raised synthetic peptide corresponding to the intracellular domain (amino acid 104-114) of human Fas conjugated with KLH as immunogen. Contains no preservatives and stabilizers.
Isotype : IgG
Reacts with Fas in amnion and chorion cells of human placenta and stratified epithelium of human oral cavity.
Working dilution :
Immunohistochemistry (paraffin section) [1:100～1:500]
Ref.: Koji, T. *et al., Acta Histochem. Cytochem.*, **27**, 459 (1994).

Anti Mouse Fas, Rabbit
015-17261 100μL
−20℃, Liquid
Antiserum raised synthetic peptide corresponding to amino acid 292-306 of mouse Fas conjugated with MAP as Immunogen. Contains no preservatives and stabilizers.
Reacts with Fas in cytoplasm of mouse hepatocyte and granulosa cells and ovum of mouse ovary.
Working Dilution :
Immunohistochemistry (paraffin section) [1:100～1:500]


Immunohistostaining of mouse hepatocyte using anti mouse Fas, Rabbit.

Anti Rat Fas Ligand, Rabbit
012-17271 100μL
−20℃, Liquid
Antiserum raised synthetic peptide corresponding to amino acid 42-56 of rat Fas ligand conjugated with MAP as immunogen. Contains no preservatives and stabilizers.
Reacts with Fas ligand in epithelium of mouse cornea and interstitial cells of mouse testis.
Working Dilution:
Immunohistochemistry (paraffin section) [1:100～1:500]


Immunohistostaining of mouse cornea using anti rat Fas Ligand, Rabbit.

2. Signal Transduction

A. Inhibitors

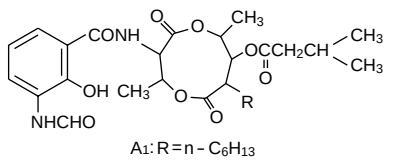
[a] H^+-ATPase Inhibitors : V-ATPase (Vacuolar H^+-ATPase) Inhibitors

Concanamycin A [Folimycin], 90.0+% (HPLC)
25μg package is now available.
036-16034 25μg
032-16031 100μg
038-16033 1mg
−20℃, Solid

Bafilomycin A1, from *Streptomyces griseus*, 95.0+% (HPLC)
023-11641 100μg
029-11643 1mg
−20℃, Solid

[b] Mitochondrial respiratory chain inhibitor

Antimycin A, from *Streptomyces* sp., 99+% (TLC)
015-17201 25mg
011-17023 100mg
2−10℃, Solid
A mixture of Antimycins A

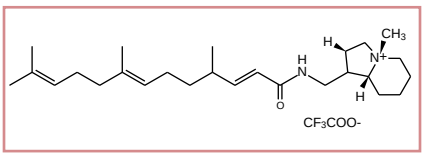

A1: R = n-C_6H_{13}
Antimycin A_1
$C_{28}H_{40}N_2O_9$=548.63

Inhibits mitochondrial electron transport specifically between cytochromes b and c1. It has been used to explore the mechanisms of electron transport. Furthermore, it has been shown to induce apoptosis, which is not prevented by the presence of bcl-2.
CAS : 1397-94-0
LD_{50} : 28mg/kg (rat, orl) (RTECS CD 0350000, UN 3172 6.1)
Appearance : Crystals-powder
Solubility : Soluble in ethyl acetate, chloroform and ethanol.
Stability : Stable in the above solvents except ethanol. The solutions are unstable when heated. Immediately inactivated at >pH9.
Ref.: Wolvetang, E.J., *et al., FEBS Lett.*, **339**, 40 (1994)

[c] Calmodulin Inhibitors

New Marine Toxin!

Stellettamide A Trifluoroacetate, 95.0+%
193-11831 100μg
−20℃, Lyophilized
A marine toxin that is a calmodulin antagonist. It inhibits Ca^{2+}-calmodulin-dpendent phosphodiesterase.



MW : 514.66 ($C_{26}H_{45}N_2O \cdot CF_3COO$)
CAS : 129744-24-7
Source : *Stelletta* sponge
Ref.: Abe, Y. *et al., Br. J. Pharmacol.*, **121**, 1309 (1997).

[d] Actin Inhibitors

Actin is one of the most abundant and common components of the cytoskeleton. Actin regulates various cell functions, such as muscle contraction, cell motility and cell division. Cytochalasins, a group of fungal metabolites, serve as actin filaments and shift the

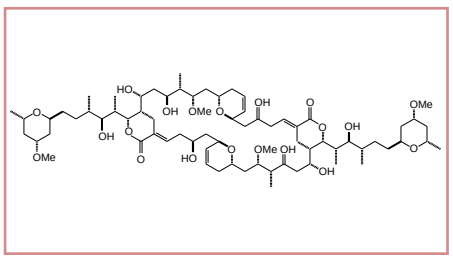
polymerization-depolymerization equilibrium towards net depolymerization of F-actin. Mycalolide B and Bistheonellide A were isolated from marine sponges, and demonstrates actin-inhibiting characteristics that are different than cytochalasin.
G-actin binding to Mycalolide B or Bistheonellide A never polymerizes even in the presence of Mg^{2+}.

New Marine Toxin!

Bistheonellide A
[Misakinolide A]
95.0+% (HPLC)

026-13711 100μg
-20℃

A marine toxin that inhibits actin polymerization by forming a 1:2 complex with G-actin.



MW : 1337.80 ($C_{74}H_{128}O_{20}$)
CAS : 105304-96-9
Source : *Theonella* sponge
Ref.: Saito, S., *et al., J. Biochem.*, **123** (1998)/Watabe, S., *et al., Cell. Struct. Funct.*, **21**, 199 (1996).

Mycalolide B

132-12081 100μg
-20℃, Lyophilized

A marine toxin that inhibits actin polymerization. Mycalolide B depolymerizes F-actin by nibbling and forms a 1:1 complex with G-actin.
MW : 1027.18 ($C_{52}H_{74}N_4O_{17}$)
CAS : 122752-21-0
Toxicity : IC_{50}=10～50nM in L1210 leukemia cells
Source : *Mycale* sp.
Soluble in methanol, ethanol and DMSO.

[e] Protein Phosphatase Inhibitors

New Marine Toxin!

Okadaic Acid, Ammonium salt

156-02211 100μg
152-02213 500μg
2-10℃, Lyophilized

A marine toxin that is a water-soluble derivative of Okadaic acid.
A causative agent of diarrhetic shellfish poisoning and a potent and specific inhibitor of protein phosphatases 1 (PP1) and 2A (PP2A) that is isolated from the sponge *Halichondria Okadai*.
MW : 822.04 ($C_{44}H_{71}NO_{13}$)
CAS : 155716-06-6
Toxicity : High toxicity
Ref.: Tachibana, K. *et al., J. Am. Chem. Soc.*, **103**, 2469 (1981)/Suganuma, M. *et al., Proc. Natl. Acad. Sci. USA.*, **85**, 1768 (1988)/Ozaki, H. *et al., J. Pharmacol. Exp. Ther.*, **243**, 1167 (1987)

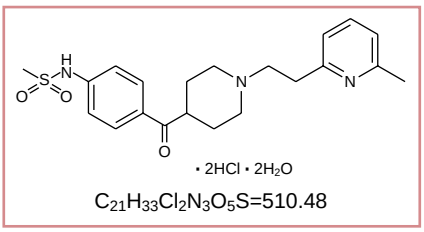
[Related Products]
•Okadaic Acid [150-01653 (25μg) 154-01651 (100μg)]
•Calyculin A [032-14451 (100μg)]

[f] K^+ Channel Blocker

E-4031, 98.0+% (HPLC)

056-06521 1mg
052-06523 10mg
050-06524 100mg
RT, Solid

E-4031 selectively suppresses rapid component (I_{kr}) of the delayed rectifier potassium current. This makes it a useful tool for analyzing K^+ channel activity in heart cells.
CAS : 113559-13-0



$C_{21}H_{33}Cl_2N_3O_5S$=510.48

Appearance : Crystalline powder-powder
LD_{50} (mus, intravenous) 112mg/kg
Applications : [1] Paneling of K^+ channel that distributes in the muscle. [2] As a lead compound in investigation to develop antiarrhythmic drugs.

3. Buffers

Tris 999
[2-Amino-2-hydroxymethyl-1, 3-propandiol 999]

015-16384 100g
013-16385 500g
011-16381 1kg
017-16383 5kg
RT, Solid

[Extracts from Specification]
Appearance: Crystals-crystalline powder, mp : 168-172℃, Loss on drying at 105℃: max. 0.2%, Absorbance (400g/L) : 260nm; max. 0.05, 290nm; max. 0.05, pH (0.1mol/L, 25℃): 10.0-10.8, Cl: max. 5ppm, SO_4: max. 0.002%, Ca: max. 4ppm, Assay (Titrimetry): 99.9+%

Dry powdered buffers

Each powder is ready to use just after dissolved in 1L of water.

Purpose	Catalog No.	Product Name	Package Size	pH*	Prescription**
for preparation of suspend solution for nucleic acid	200-14911	10×TE Powder, pH 8.0	10xfor 1L	7.8 - 8.2	50mM Tris, 50mM Tris-HCl and 10mM EDTA·2Na
for electrophoresis (DNA)	206-13771	25×TAE Powder	4xfor 1L	7.9 - 8.3	0.5M Tris, 0.5M Tris-acetate and 25mM EDTA·2Na
	203-13781	10×TBE Powder	4xfor 1L	8.0 - 8.5	0.9M Tris-borate and 14.6mM EDTA·2Na
for electrophoresis (RNA)	138-13281	10×MESA Powder	4xfor 1L	6.7 - 7.3	124mM MPOS, 76mM MOPS・Na, 50mM Sodium acetate and 10mM EDTA·4Na
for cell washing buffer	200-13791	20×TBS Powder	4xfor 1L	7.2 - 7.7	75mM Tris, 0.425M Tris-HCl, 2.8M NaCl and 60mM KCl
for blotting and hybridization	199-11291	20×SSC Powder	4xfor 1L	7.5 - 8.2	3M NaCl and 0.3M Sodium citrate
for blotting and hybridization for nucleic acid	191-11871	20×SSPE Powder	4xfor 1L	7.2 - 7.6	3M NaCl, 12mM NaH_2PO_4, 188mM Na_2HPO_4 and 20mM EDTA·2Na
	162-19321	PBS (-) Powder (0.01 mol/L)	20xfor 1L	7.2 - 7.4	0.35g NaH_2PO_4, 1.28g Na_2HPO_4 and 8g NaCl

* : pH, tested after dilution to working concentration.
** : Prescription, when dissolved in 1 liter deionized water.

4. Antibiotics

Antimycin A, from *Streptomyces* sp., 99+% (TLC)

015-17201 25mg
011-17023 100mg
2–10℃, Solid
A mixture of Antimycins A
See Signaltransduction-Inhibitors for the detailed information.

Bafilomycin A1, from *Streptomyces griseus*, 95.0+% (HPLC)

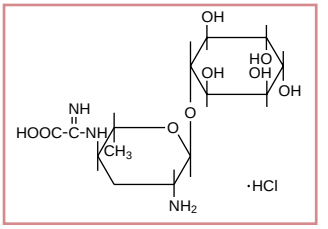
023-11641 100μg
029-11643 1 mg
–20℃, Solid
V-ATPase inhibitor

Concanamycin A [Folimycin], 90.0+% (HPLC)

25μg package is now available.
036-16034 25μg
032-16031 100μg
038-16033 1mg
–20℃, Solid
V-ATPase inhibitor

Kasugamycin Hydrochloride

115-00521 1g
111-00523 10g
2–10℃, Powder
Kasugamycin, a unique aminoglycoside antibiotic, has been used for many years solely for crop protection. It exhibits limited activity against phytopathogenic microbes such as Pyricularia oryzae and certain strains of *Pseudomonads*.



Mitomycin C [MMC] ,98.0+% (UV)

134-07911 10mg
2–10℃
See 17. Ames Mutagenicity Test System.

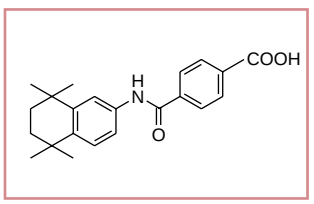
5. Biologically Active Substances

A. Synthetic Retinoids

Retinoids, retinoic acid and its bioisosters, regulate many biological functions such as cell differentiation, proliferation and embryonic development in vertebrates, through binding to and activation their specific nuclear receptors. Five representative synthetic retinoids are available for researcher investigation in signal transduction system through retinoids receptors.

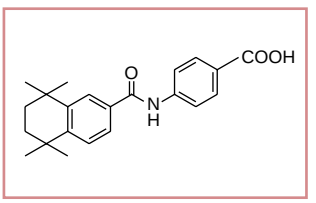
Am80, 98.0+%(HPLC)

017-16621 5mg
RT, Solid
RARα, β-selective agonist
$C_{22}H_{25}NO_3$ = 351.44



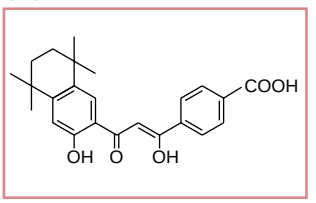
Am 580, 98.0+%(HPLC)

014-16631 5mg
RT, Solid
RAR-selective agonist
$C_{22}H_{25}NO_3$ = 351.44



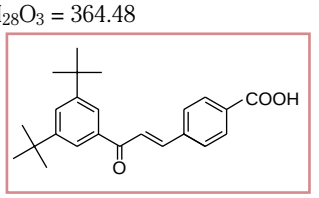
Re 80, 95.0+%(HPLC)

180-01391 5mg
RT
RAR agonist
$C_{24}H_{26}O_5$ = 394.46



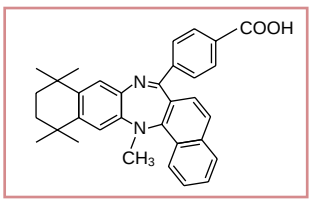
Ch 55, 98.0+%(HPLC)

039-16781 5mg
RT, Solid
RAR agonist
$C_{24}H_{28}O_3$ = 364.48



LE 540, 98.0+%(HPLC)

123-04521 5mg
RT, Solid
RAR antagonist
$C_{33}H_{32}N_2O_2$ = 488.62



[Related Products]

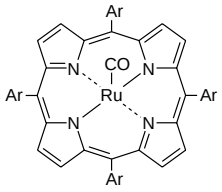
- **Retinoid X Receptor-β, Human, recom., Soln.** (187-01421, 50μg, –70℃, Liquid)
- **Anti Human Retinoid X Receptor-β, MAb** (#MOK13-17)(012-17031, 100μg, –20℃, Liquid)(Westernblot 1:400)
- **9-*cis*-Retinoic Acid** (180-01271, 5mg, –20℃)
- **TTNPB** (RAR-selective agonist)(204-14181, 5mg, –20℃)
- ***all-trans*-Retinoic Acid** (186-01114 (50mg), 182-01111 (250mg), 188-01113 (1g), –20℃)

B. Drug Metabolism

Highly Efficient Oxidation with Heteroaromatic N-oxide Catalyzed by Ruthenium Porphyrin
P450 like Ru-porphyrin complex catalyzes highly efficient epoxidation of olefin and oxidation of alkanes and aromatic compounds, etc. with heteroaromatic *N*-oxide. This system is usable for research of Cytochrome P450.

Ruthenium Porphyrin Complex [Ru Porphyrin]

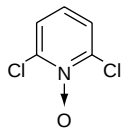
188-01571 20mg
2-10℃, Solid



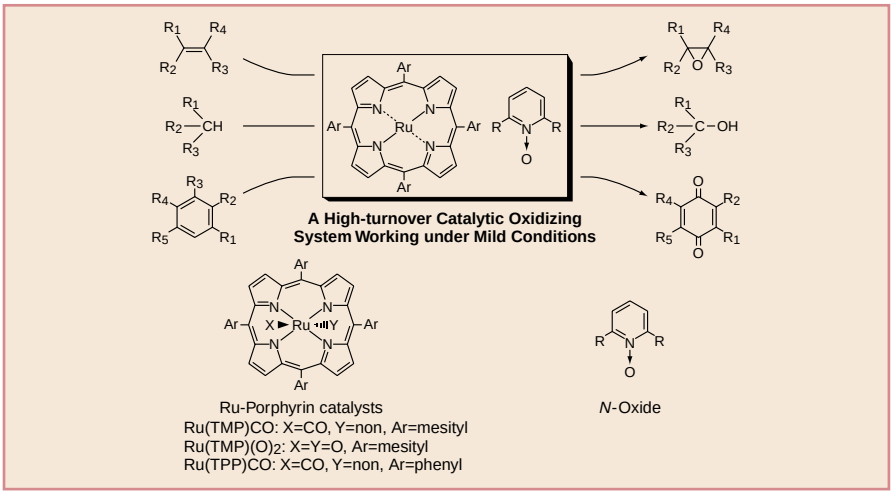
Ar=2,4,6-trimethylphenyl
$C_{57}H_{52}N_4ORu$=910.12

2,6-Dichloropyridine 1-Oxide [*N*-Oxide]

045-27671 60mg
2-10℃, Solid



$C_5H_3Cl_2NO$=163.99



Ref.:
1. 1) For reviews:(a)Ortiz de Montellano, P. Ed.; "Cytochrome P450" ; Plenum: New York, 1986. b) Meunier, B. *Chem. Rev.*, 1992, **92**, 1411.
2. Ochiai, E., "Aromatic Amine Oxides" ; Elsevier ; Amsterdam, 1967 and references cited therein.
3. Higuchi, T.; Ohtake, H.; Hirobe, M., *Tetrahedron Lett.*, 1989, **30**, 6545.
4. Nakagawa, H., Higuchi, T., Kikuchi, K., Urano, Y. and Nagano, T. *Chem. Pharm. Bull.*, 1998, **46**, 1656
5. Ohtake, H.; Higuchi, T.; Hirobe, M., *Tetrahedron Lett.*, 1992, **33**, 2521.
6. Higuchi, T.; Ohtake, H.; Hirobe, M., *Tetrahedron Lett.*, 1991, **32**, 7435.
7. Ohtake, H.; Higuchi, T.; Hirobe, M.; *J. Am. Chem. Soc.*, 1992, **114**, 10660.
8. Ohtake, H.; Higuchi, T.; Hirobe, *Heterocycles*, 1995, **40**, 867.
9. Shingaki, T.; Miura, K.; Higuchi, T.; Hirobe, M.; Nagano, T. *Chem. Commun.* 1997, 861-862
10. Higuchi, T. ; Satake, C.; Hirobe, M. *J. Am. Chem. Soc.* 1995, **117**, 8879.

6. Cell Culture

2-*O*-α-D-Glucopyranosyl-L-Ascorbic Acid ,99.0+% (HPLC)

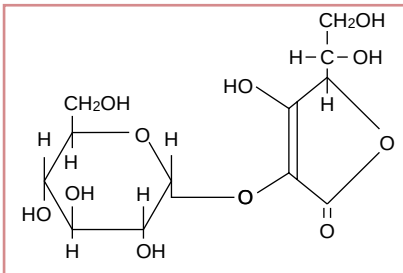
[Ascorbic Acid 2-Glucoside]
074-04581 1g
070-04583 10g
2-10℃ (ship at RT), Solid

Glucose-stabilized Vitamin C

This product is vitamin C stabilized by masking the reductive site with glucose. The glucose-stabilized vitamin C can be cleaved by an endogenous enzyme into vitamin C and glucose, and acts as vitamin C itself in living cells.

mp : 158~163℃

Appearance: crystalline powder-powder

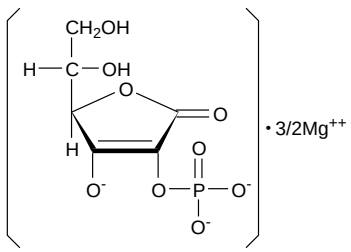


$C_6H_7O_5C_6H_{11}O_6$=338.27

L-Ascorbic Acid Phosphate · Mg Salt · nH_2O, 95.0+%

013-12061 10g
RT

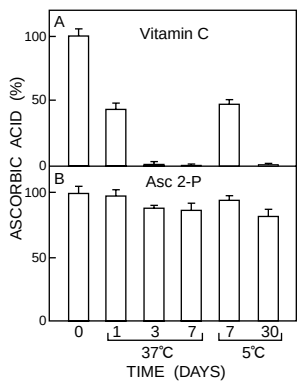
L-Ascorbic Acid Phosphate has been shown to promote cell growth and collagen synthesis. Specifically, Asc 2-P increases the steady state levels of mRNA for type I collagen chains and elevates the transcriptional rates of type I collagen genes.



$C_6H_6O_9P$ 3/2Mg : MW=289.54

Problems exist, however, with typical ascorbic acid, the greatest of which is its short biological half-life. Free ascorbic acid is very unstable in solution, especially under culture conditions of neutral pH and 37℃. L-Ascorbic acid phosphate is much more stable product and can thus be used more easily and effectively.

Stability of Vitamin C and L-Ascorbic Acid Phosphate Mg salt.



Prepare Dulbecco's modified Eagle medium included 10% FBS and 10mM L-Ascorbic Acid Phosphate Mg salt/Vitamin C. After sterilization of this medium by filtration method, store at 5 or 37℃.

7. Cell Proliferation and Cytotoxicity Assay

Cytotoxic Fluoro-test wako (FACLS method*)

293-55001 1000 tests
-20℃

*: Fluorometric Assay based on Cell Lysis & Staining method (FACLS method)

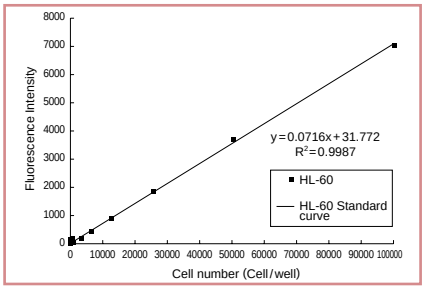
[Features]

- Determination of viability of cells by percentage of intact and/or living cells per total cells due to unique properties of the dye
- A simple 2-step procedure, performed in 5 minutes, applicable to simultaneous screening assay for many samples
- Cell pre-treatments are not necessary. Difficult preparation of dye solution like MTT and XTT are avoided.
- Sensitive & accurate measurement based on cell membrane permeability and the DNA-affinity of the unique fluorescent dye, avoiding interference with changes of pH by addition of drug, temperature, reaction time and serum containing in culture medium, all of which are inevitably associated with use of enzyme reaction in the other assays.
- No hazardous wastes are generated from disuse of RI, toxic organic solvents, or dyes.
- Applicable to adhesive cells as well as non-adhesive cells

[Principle]

The fluorescence reagent has unique properties. The dye emits intense fluorescence at 100～1,000 times the original intensity when bound to DNA. In addition, the dye enters into cells with damaged cell membranes or dead cells, but not intact or living cells. Thus, the dye selectively stains damaged and dead cells. In the assay system, therefore, one can estimate :

1) the number of damaged cells by measuring fluorescence intensity [F_D] generated after addition of the dye to the cell sample
2) the number of total cells in the assay by measuring fluorescence intensity [F_T] after subsequent addition of the cell lysis reagent to the sample to disrupt membrane permeability of intact cells
3) the number of intact or living cells by the fluorescence intensity resulting from subtracting F_D from F_T.
4) the viability of the cell sample expressed by the percentage of intact cells per total cells



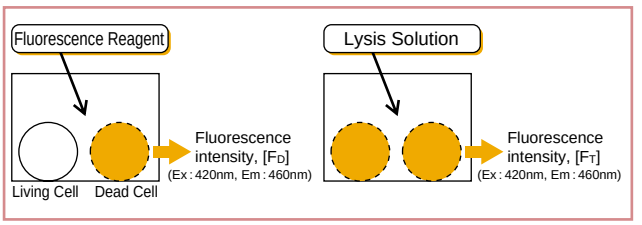
[Contents]

Fluorescence Reagent 1 vial×500μL
Lysis Solution 1 vial×10 mL

[Required Apparatuses]

Fluorescence/absorbance multiplate reader, Spectrafluor (Tecan Austria), or Fluorescence-absorbance/Luminescence multiplate reader, etc.

Ref.: Kato, F., Tanaka, M. and Nakamura, K., *Toxicology in Vitro*, **13**, 923-929 (1999).



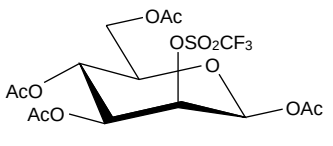
8. Carbohydrate Synthesis

1,3,4,6-Tetra-*O*-acetyl-2-*O*-trifluoromethanesulfonyl-β-D-mannopyranose, 98.0+% (HPLC)

208-14571 100mg
204-14573 1g
-20℃, Solid

mp : 119 - 122℃

Starting material for synthesis of oligo-, thiooligo- or deoxy halogenated saccharides, etc.

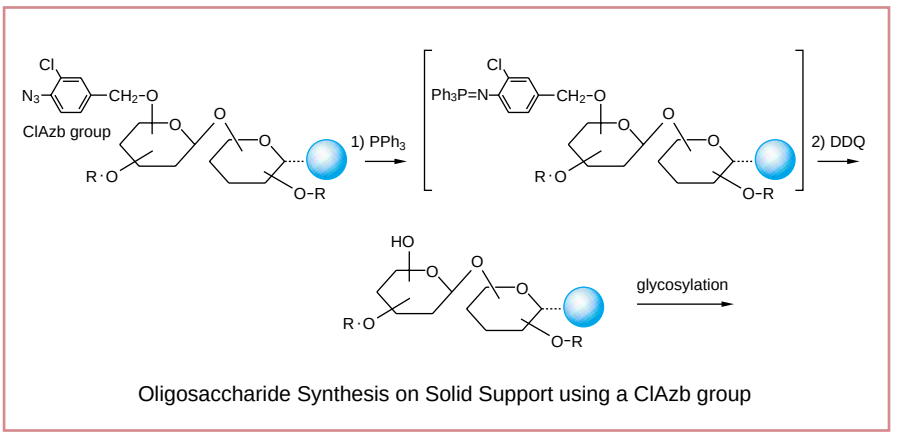


$C_{15}H_{19}F_3O_{12}S$=480.37

Selective Protecting Group 4-Azide-3-chlorobenzyl bromide

013-16961 1g
RT, Solid

A New Protecting Reagent for sugar hydroxy group, 4-Azide-3-chlorobenzyl Bromide (Cl-Azb) has more resistant to acid compared with a protecting group, 4-Azidobenzyl (Azb) group. De-protection of Cl-Azb group is the same as Azb



Oligosaccharide Synthesis on Solid Support using a ClAzb group

group by applying Triphenylphosphine (PPh3), converting Cl-Azb to iminophosphorane derivatives and then oxidizing by 2,3-Dichloro-5,6-dicyano-*p*-benzo-quinone (DDQ oxidation). Azb group is directly cleaved by DDQ oxidation, however, Cl-Azb group is stable to DDQ oxidation. On the other hand, *p*-Methoxybenzyl (MPM) group can be de-protected by DDQ oxidation in the presence of MPM group. Therefore, site specific sugar synthesis can be done.

Ref.: Egasa, K., *et al., Synlett*, **6**, 675 (1997)

9. Enzyme Inhibitors and Substrates

A. Enzyme Inhibitors

[a] HMG-CoA Reductase Inhibitors

Competitive inhibitors of 3-hydroxy-3-methylglutaryl coenzyme A (HMG-CoA) reductase are the rate limiting enzymes in cholesterol biosynthesis. By blocking the conversion of HMG-CoA to the cholesterol precursor mevalonate, these agents inhibit hepatic synthesis of cholesterol, causing a subsequent stimulation of LDL receptors and an increase in the clearance of LDL and its precursor particles from the circulation.

Ref.: Singer, I. I., *et al., Proc. Natl. Acad. Sci. USA*, **85**, 5264 (1988)/Endo, A., *et al., FEBS LETTERS*, **72**, 323 (1976)

Compactin, 95.0+% (HPLC)

[ML-236B]
033-17301 25mg
2-10℃, Solid
An analog of Lovastatin
MW : 390.51 ($C_{23}H_{34}O_5$)
CAS : 73573-88-3
Toxicity : LD_{50} (mus, orl) 2 g/kg.
Appearance: Crystalline powder-powder
mp : 152℃

Lovastatin, 95+% (HPLC)

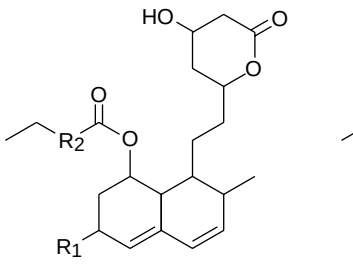
125-04581 25mg
2-10℃, Solid
MW : 404.54 ($C_{24}H_{36}O_5$)
CAS : 75330-75-5
Toxicity : LD_{50} (mus, orl) 1 gm/kg
Appearance : White-nearly white, crystals-powder
mp : 174.5℃

Simvastatin, 95+% (HPLC)

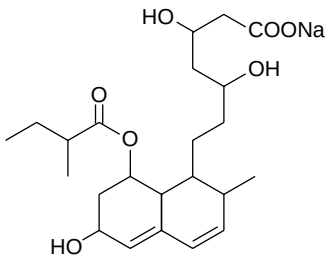
193-12051 25mg
199-12053 100mg
2-10℃, Solid
MW : 418.57 ($C_{25}H_{38}O_5$)

Pravastatin Sodium, 95+% (HPLC)

162-19821 25mg
168-19823 100mg
2-10℃, Solid
MW : 446.51 ($C_{23}H_{35}NaO_7$)



R_1=CH_3 R_2=CH_2CH_3 Lovastatin
R_1=H R_2=CH_2CH_3 Compactin
R_1=CH_3 R_2=$C(CH_3)_2$ Simvastatin

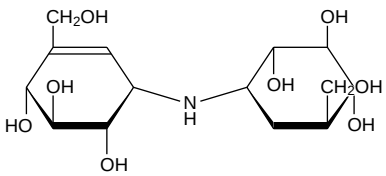


Pravastatin Sodium

[b] Trehalase Inhibitor

Validoxylamine A

[VAA], 95.0+% (cGC)
220-01321 20mg
-20℃, Solid
MW : 335.35 ($C_{14}H_{25}NO_8$)



$C_{14}H_{25}NO_8$=335.35

CAS : 82309-75-9
Appearance : Crystals-powder
A trehalase inhibitor, Validoxylamine A (VAA), is produced *by Streptomyces hygroscopicus* subsp. *Limoneus*. VAA consists of two kinds of amino-cyclitols and inhibits trehalase competitively because its chemical structure resembles that of trehalose. Trehalose is a common blood sugar and an energy source in insects. Trehalase (E.C.3.2.1.28) which hydrolyses the sugar is distributed in most insect tissues and organs for utilizing the sugar. VAA gives a lethal effect in fungi, bacteria, insects and mammals. Inhibition of the enzyme is expected to cause disturbance of energy metabolism and critical effects on the insects life.

Ref.: Kamada, Y., *et al., J. Antibiot.*, **XL**, 563 (1986)/ Kono, Y., *et al., Appl. Entomol. Zool.*, **28**(3), 379-386 (1993)/ Kono, Y. *et al., J. Insect Physiol.*, **40**, 455 (1994)

B. Enzyme Substrates

[a] Peroxidase Substrate Tablets

- 1 min.' preparation to make substrate buffer and color reagent with an appropriate buffer and 30% H_2O_2.
- Stable for 2 years.
- PTP packages of tablets for easy handling.

DAB Tablet

[DAB · 4HCl; 3,3'-Diaminobenzidine Tetrahydrochloride]
2-10℃, Solid

10mg substrate/Tablet
049-22831 50 T
045-22833 100 T

5mg substrate/Tablet
040-27001 50 T
046-27003 100 T

OPD Tablet

[OPD · 2HCl; *o*-Phenylenediamine Dihydrochloride]
2-10C, Solid

30mg substrate/Tablet
152-02171 50 T
158-02173 100 T

13mg substrate/Tablet
158-01671 50 T
154-01673 100 T
152-01674 2000 T

10mg substrate/Tablet
155-02161 50 T
151-02163 100 T

5mg substrate/Tablet
158-02151 50 T
154-02153 100 T

2mg substrate/Tablet
151-02141 50 T
157-02143 100 T

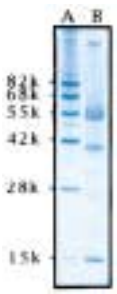
Bubbling makes tablets easily soluble.

10. Electrophoresis/Blotting

A. Markers

Dr. Western

308-51661 5×40μL
-20℃, Frozen



Membrane : PVDF membrane
Lane A : 2μL/Lane of Dr. Western (containing 0.05μg of each protein)
Lane B : 0.1μg of Anti-r-hALT partial purification
Primary Ab : Anti rhALT, MAb (10μg/mL)
Secandary Ab : Goat anti mouse IgG, HRP conjugated.

Marker of molecular weight for Westernblotting, usable for chemiluminescence and colorimetric detection.

[Features]

1. Consists of repeated polymers of IgG-binding domain of protein A.
2. MW ladder can be visualized along with the bands of the target protein on a single image on immunoblots and target bands.
3. Sharp bands due to *E. coli* recombinant.
4. The ladder enables you to estimate accurate molecular weights.

[Preparation]

Six kinds of artificial IgG- binding proteins (15k-82k), expressed in *E. coli*, are dissolved in 200μL of buffer.
MW : 14,800, 28,201, 41,603, 55,004, 68,406 and 81,807

Ref.: Kihira, Y., *et al., J. Chromatogr.*, **597**, 277-283 (1992)/ Laemmli, U.K., *Nature* (London), **227**, 680-685 (1970)/ Kihira, R., *et al., Urol. Oncol.*, **2**, 20-26 (1996).

Manufactured by Oriental Yeast Co., Ltd. (Japan) under license with RepliGen Corp. (USA)

B. Agarose

	Agarose Conc.	DNA Size	Gel Strength (g/cm2)	Gelling Temp. (℃)	mp (℃)	Sulfate or Sulfer (SO4)	Water	EEO (-Mr)
Agarose S 312-01193, 100g	0.5 - 2 %	0.5 - 30 kbp	>1,500 (1.5%)	37 - 39℃ (1.5%)	88 - 90℃ (1.5%)	<0.1%	<10%	0.1 - 0.2
Agarose HS 312-01431, 100g	0.5 - 2 %	0.5 - 30 kbp	>2,000 (1.5%)	37 - 39℃ (1.5%)	91 - 93℃ (1.5%)	<0.1%	<10%	0.07 - 0.13
Agarose L 317-01182, 25g	0.5 - 2 %	0.5 - 30 kbp	>450 (1.5%)	<30	<65℃	<0.1%	<10%	<0.1
Agarose H 319-01201, 10g 317-01202, 25g	0.2 - 1 %	1 - 200 kbp	>2,800 (1.5%)	37 - 39℃ (1.5%)	<98℃ (1.5%)	<0.1%	<10%	0.1 - 0.2
Agarose 21 315-03241, 25x3g 313-03242, 25g	2 - 5 %	0.01 - 1.0 kbp	>800 (3%)	34 - 38℃ (3%)	<85℃ (3%)	<0.1%	<10%	<0.1
Agarose X 311-02682, 25g 313-02681, 100g	2 - 6 %	0.01 - 1.0 kbp	>1,000 (3%)	29 - 33℃ (1.5%)	<85℃ (1.5%)	<0.14%	<10%	0.06 - 0.14
Agarose GB 314-01511, 10g				<30℃ (1.5%)	<65℃ (1.5%)	<0.1%		

Application	S	HS	L	H	21	X	GB
Electrophoresis of PCR Products and DNA Fragments (10-1,000bp)					○	○	
Electrophoresis of PCR Products And DNA Fragments (<30kbp)	○	○	○	○			
Electrophoresis of PCR Products And DNA Fragments (>30kbp)				○			
Pulsed-Field Gel Electrophoresis (1-2,000kbp)	○	○	○				
Pulsed-Field Gel Electrophoresis (>2,000kbp)				○			
In-gel Enzymatic Manipulations			○				○
Recovery of DNA from Gel	○	○	○	○	○	○	
Northern Blots/ Southern Blots	○	○	○	○	○	○	

C. Stain

Quick CBB

299-50101 for 2L
RT, Liquid

Sample : BSA
Series diluted solutions of 5μg protein were analyzed by SDS-PAGE, followed by Quick-CBB staining with microwave oven or a general procedure.
Electrophoresis : SDS-PAGE 10% gel (Laemmli Method)

Quick-CBB (Coomassie Brilliant Blue) is a stain for detection of protein on the PAGE within an hour.
In combination with a microwave oven treatment, Wako has developed a very quick staining method, allowing protein band staining within 10 minutes.

Kit Contents :

1. Staining solution A (contains CBB R-250) 1 bottle×1L
2. Staining solution B 1 bottle×1 L

D. Kits

Highly Sensitive Immunoblotting Kit :

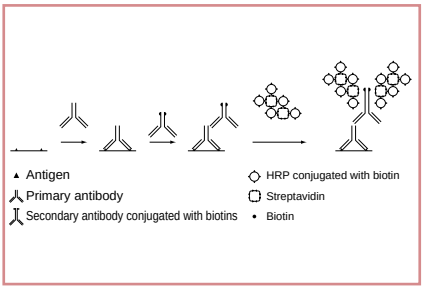
ImmunoStar

[Features]

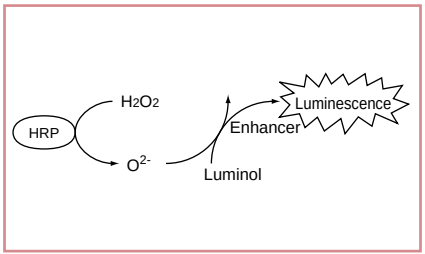
1. Use of original enhanced luminol-HRP chemiluminescence system is more sensitive than the original colorimetric development.
2. Prolonged exposure, several hours, results in increasing the sensitivity due to long term chemiluminescent emission.
3. Lower background compared with other detection systems including color development.
4. After using chemiluminescent development the membrane can be reused for colorimetric development.
5. The membrane can be used for reprobing.

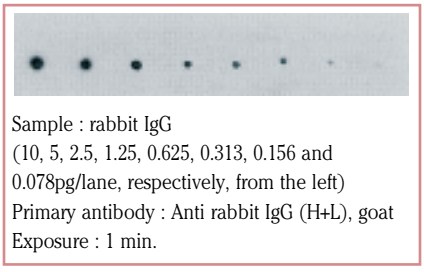
[Principles]

1. Capture of antigen



2. Chemiluminesent development





Sample : rabbit IgG
(10, 5, 2.5, 1.25, 0.625, 0.313, 0.156 and 0.078pg/lane, respectively, from the left)
Primary antibody : Anti rabbit IgG (H+L), goat
Exposure : 1 min.

ImmunoStar Kit for Mouse

291-54603 for 1000cm²
2-10℃

ImmunoStar Kit for Rabbit

297-54703 for 1000cm²
2-10℃

[Each Content]

1. Blocking solution
2. Anti mouse/rabbit IgG (H+L), goat, biotin conjugated (100×)
3. ABC stock solution (100×)(streptavidin-biotin labeled HRP complex)
4. Diluent stock solution (10×)
5. Wash stock solution (20×)
6. Chemiluminescence solution A
7. Chemiluminescence solution B
8. Chemiluminescence solution C

ImmunoStar Reagents

295-55201 for 1000cm²
291-55203 for 5000cm²
2-10℃

ImmunoStar reagents are designed for a simple and highly sensitive immunoblotting utilizing detection by enhanced chemiluminescence. Detection levels comparable to those reached with radioactive labels are achieved by use of a unique enhancer. Sensitivity is further enhanced by use of Wako's ABC Solution (Streptavidin and Biotin-conjugated peroxidase complex.)

[Contents]
1. Chemiluminescence solution A
2. Chemiluminescence solution B
3. Chemiluminescence solution C

CLEAR STAIN Ag

311-03961 140×140×1mmx20
RT

Silver Stain is used for high sensitive detection of nucleic acids on polyacrylamide gel with low background. Sensitivity: 50～100 times higher than the ethidium bromide stain, and 20 times higher than the SYBR® Green stain. 20～50 pg/band of DNA can be detected using this kit.
Manufactured by Nippon Gene (Japan)

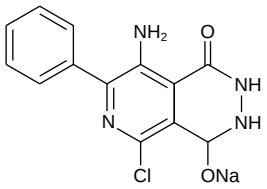
Sample: Marker 9 (φX174/*Hinf* I) digest
500, 250, 125, 63, 32, 16, 8, 4, 2, 1, 0.5, 0.25 ng/lane, respectively, from the left
6% of polyacrylamide gel (140×140×1mm)
TBE buffer

Ref.:Tegalstrom, H., *Electrophoresis*, **7**, 226 (1986)

11. Chemiluminescence Reagent

L-012 Sodium Salt, 98.0+% (HPLC)

[8-Amino-5-chloro-7-phenylpyrido [3,4-d] pyridazine-1,4-(2H,3H) dione sodium salt]
129-04621 10mg
-20℃, Solid



$C_{13}H_9ClN_4NaO_2$=311.68

L-012, which is a highly sensitive chemiluminescence (CHL) probe, is more active than luminol. L-012 reacts with various types of reactive oxygen species generated by activated neutrophils in human blood and oral cavity, and from peritoneal cavity of the rat. This product can be applied to any other EIA that uses horseradish peroxidase to improve sensitivity.

Ref.: "Improved Enzyme Immunoassay for Human Basic Fibroblast Growth Factor Using A New Enhanced Chemiluminescence System", Ii, M., *et al., Biochem. Biophys. Res. Comm.*, **193** (2), 540-545 (1993)/"A New Sensitive Chemiluminescence Probe, L-012, for Measuring The Production of Superoxide Anion by Cells", Nishinaka, Y., *et al., Biochem. Biophys. Res. Comm.*, **193** (2), 554-559 (1993)/"Analysis of Reactive Oxygen Species Generated by Neutrophils Using a Chemiluminescence Probe L-012", Imada, I., *et al., Analytical Biochemistry*, **271**, 53-58 (1999)

12. Molecular Biology

A. Mitochondrial DNA Extraction Kits

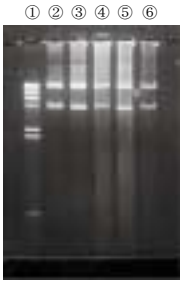
mtDNA Extractor CT Kit

291-55301 25 tests
2-10℃

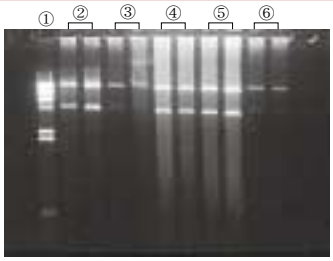
For the extraction of mitochondrial DNA from Cell cultures and Tissue samples

[Features]
1. A simple timesaving protocol
2. Isolated mtDNA is pure enough to apply to subsequent experiments such as PCR and restriction enzyme digestion.
3. mtDNA isolated from as much as 5 mg of tissue is enough to amplify given DNA fragment by PCR. mtDNA isolated from 50 mg of tissues, other than muscle tissues (250mg), can be detected by SYBR® Green-I or SYBR® Gold-staining after agarose gel electrophoresis.
4. The method is applicable to fresh and frozen tissues.
5. No hazardous organic solvents such as phenol and chloroform are required.

Figure : Agarose gel analysis
Half of mtDNA extracted from 50mg of tissues or 250mg of skeletal muscles were digested with Pst I for 1 hr. Digested



Samples :
① λ/*Hind* Ⅲ Marker
② brain
③ heart
④ liver
⑤ kidney
⑥ skeletal muscle



Samples : Frozen sections (-20℃, 1 day) of ① λ/*Hind* Ⅲ Marker, ② brain, ③ heart, ④ liver, ⑤ kidney, ⑥ skeletal muscle

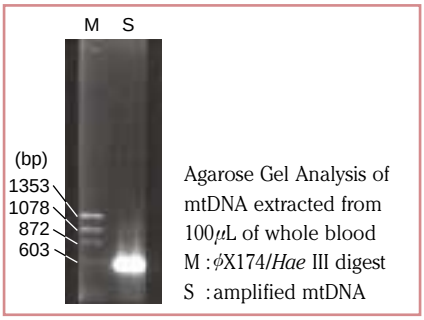
mtDNA Extractor WB Kit

293-54401 25 tests
2-10℃

For isolation of mtDNA from human whole blood

[Features]

1. A rapid and efficient protocol for isolation of mtDNA from human whole blood
2. Allows simultaneous preparation from sample for screening assay



Agarose Gel Analysis of mtDNA extracted from 100μL of whole blood
M : φX174/*Hae* III digest
S : amplified mtDNA

B. DNA Extraction Kits

DNA Extractor WB Kit (Sodium Iodide Method)

291-50502 50 tests
2-10℃

For extraction of genomic DNA from Whole Blood, cell culture, and tissue. Employs an extraction procedure for DNA purification after lysis.

[Features]

- A single tube is necessary throughout the assay.
- Using NaI as a chaotropic agent realizes intact DNA isolation of both high purity and high recovery without the use of phenol and chloroform.
- Extracted DNA is suitable for several applications, including restriction enzyme digestion, Southern blot analysis, and PCR amplification.

Ref.: Wang, L., *et al., Nuclei Acids Research*, **22**(9), 1174-75 (1994).

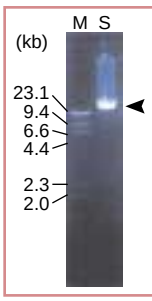
DNA Extractor WB-Rapid Kit

297-54801 20 tests
293-54803 200 tests
2-10℃

This kit is similar to our genomic DNA kit, the DNA Extractor WB Kit (Cat. #293-50501).

[Features]

- In 30～40 minutes, genomic DNA from whole blood, etc. can be isolated.
- The isolated genomic DNA can be usable for PCR amplification.
- A single tube is necessary throughout the assay.
- No hazardous organic solvents such as phenol and chloroform are required.
- Genomic DNA can also be isolated from frozen blood samples without deterioration.



Agarose Gel Analysis of DNA extracted from 100μL of human whole blood was visualized.
M: λ *Hind* III Marker
S : genome DNA

DNA Isolator PS Kit

295-52401 100 tests
2-10C

For isolation of DNA from pathological Paraffin-embedded tissue Sections and specimens

[Application]

- For gene analysis and epidemiological studies in combination with DNA amplification techniques
- Overcomes disadvantages such as time-consuming deparaffinization followed by deproteinization from fixed tissues.

DNA Isolator PS-Rapid Reagent

291-56401 100tests
RT

In 20 minutes, DNA can be isolated from Paraffin-embedded tissue Sections and specimens. The isolated DNA can be usable for PCR amplification.

DNA Extractor Kit

295-50201 50 tests
2-10℃

For extraction of contaminant DNA in serum and residual DNA in biopharmaceuticals

[Features]

- A single tube is necessary throughout the assay
- Using NaI as a chaotropic agent realizes a DNA isolation of both high quality and high recovery from biological fluids without the use of phenol and chloroform
- Extracted DNA is applicable to use with Molecular Devices' Threshold™ System.

Ref.: Ishizawa, M., *et al.*, S., "Simple procedure of DNA Isolation from Human Serum", *Nucleic Acids Res.*, **19**, 5792 (1991)

C. Re-folding Reagents: Recovery from Inclusion Bodies

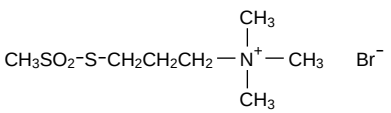
There was a problem when the activated protein from *E. coli* with the recombination plasmid is produced. The result sometimes causes inclusion bodies, or the insoluble fraction. Wako helps your research with the following TAPS-sulfonate and Thioredoxin.

TAPS-sulfonate

[3-Trimethylammoniopropyl methane thiosulfonate Bromide]

203-14521 1g
209-14523 5g
RT, Solid

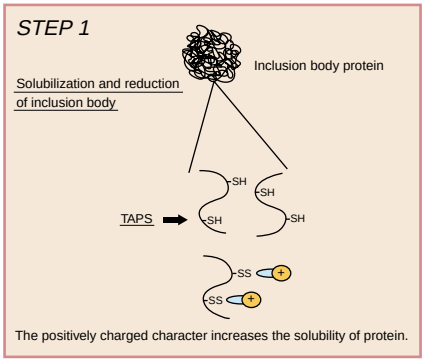
A Reagent for S-Alkylsulfidation
TAPS-sulfonate; thiosulfonate chemical compound with the basic quarternary-amine synthetic reagent adds the powerful positive charge by modifying at Cysteine residue of the recombinant protein. By the action of this positive charge, it is possible to promote further dissolution and allow for the use of centrifuge, dialysis, and chromatography techniques for the next purification.

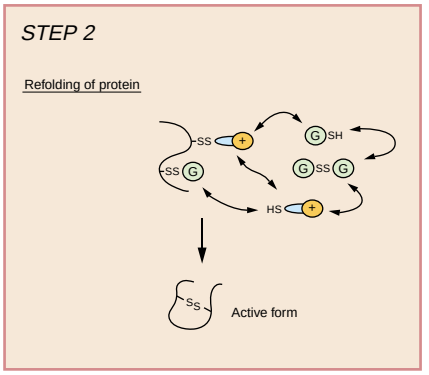


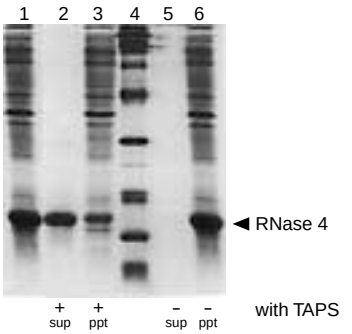
$C_7H_{18}BrNO_2S_2$ mol. wt.=292.26

Appearance : Crystals
Preparation : Dissolve in distilled water to prepare a 2M stock solution.

Ref.: Inoue, M, *et al.*: *Biotechnology Apply Biochem.*, **28**, 207 (1998)/Seno, M. *et al.*: *Growth Factors*, **15** (3), 215 (1998)/Simon, S. *et al.*: *J.M.B.*, **285**, 205 (1999)







SDS/PAGE patterns of RNase 4
Lane 1, Inclusion body; Lane 2, supernatant of reduced protein derived with TAPS-sulfonate; Lane 3, precipitate of reduced protein derived with TAPS-sulfonate; Lane 4, molecular marker; Lane 5, supernatant of reduced protein; Lane 6, precipitate of reduced protein.

Thioredoxin, recombinant, 98+%

203-13041 5g
2-10℃, Lyophilized

Thioredoxin is a low molecular weight oxido-reductase that contains a single disulfide active site. It was originally isolated from *E. coli* as a hydrogen donor for ribonucleotide reductase. It has been suggested that thioredoxin may catalyze the formation of correct disulfides during protein folding because of its ability to act as an efficient oxidoreductant.

MW : 11,700

Ref.: Holmgren, A., *J. Bio. Chem.*, **254**, 9627 (1986)/Pigiet, V. P., *et al.*, *Proc. Natl. Acad. Sci. USA.*, **83**, 7643 (1986)

D. Primers

DNA Oligomer (10) set

DNA Oligomer (10) set contains 12 different 10-base oligonucleotide primers, which have the same Tm, or melting temperature. The sequences were selected randomly. Each set contains 12, 0.5 O.D. tubes.

Storage condition : Keep at 2-10℃.
After reconstitution, keep at -20℃.

DNA Oligomer (10) set I (Tm30-A)

No.	Sequence
AT 21	GTTCTTAGCG
AT 22	AGGCAGGAAA
AT 23	CGGCGTTTTT
AT 24	CACCTGGAAT
AT 25	CTTCGTAAGG
AT 26	CGAGGTAAGT
AT 27	GGGACATGAA
AT 28	GGAGTCAGAA
AT 29	GCCTCTAGAT
AT 30	CTACGCGAAA
AT 31	CATGAAACCG
AT 32	GGTCTATACG
049-27211	

DNA Oligomer (10) set I (Tm30-B)

No.	Sequence
AT 41	CGGATGTTGT
AT 42	GGCTGGTATA
AT 43	CGTGTATTGG
AT 44	CAACCAACGT
AT 45	CAAGACGCAA
AT 46	GGTCCTATAC
AT 47	CGACTCAATG
AT 48	GGTGATCAAC
AT 49	GTGGATGCAT
AT 50	CGGCTTTATC
AT 51	CCCTGAACAA
AT 52	CCGCATTGTA
046-27221	

DNA Oligomer (10) set I (Tm30-C)

No.	Sequence
AT 61	CCCTGGTAAA
AT 62	CATCTTGGCA
AT 63	CGGCAGTATA
AT 64	CGAGAATACG
AT 65	GGAGAATCGT
AT 66	GCTCTTGCTA
AT 67	GATCCTCTTC
AT 68	CGAGACTTTG
AT 69	TTTCCCGCAA
AT 70	CATCAAGTCG
AT 71	GGGCATAAAG
AT 72	GTGCGTACTA
043-27231	

DNA Oligomer (10) set I (Tm30-D)

No.	Sequence
AT 81	GTACGCAAGT
AT 82	TGACGGTGAT
AT 83	GACCGAAAAG
AT 84	GTACAAAGCG
AT 85	GAGCGATCAT
AT 86	CATCTACCTC
AT 87	GGGAACGTTA
AT 88	GAAGCCGAAT
AT 89	CCAGAAGTTC
AT 90	CCACGAAGAA
AT 91	CTTCTTGTCG
AT 92	AGGACAATCG
040-27241	

DNA Oligomer (10) set I (Tm30-E)

No.	Sequence
BT 01	CATCAACCTC
BT 02	CCTGACGTTT
BT 03	TCTGCAAGCA
BT 04	CGCTCTAAAG
BT 05	GGAGGAATAC
BT 06	GTTCGTATCG
BT 07	CAAGGTCATC
BT 08	GCTGAAGAAG
BT 09	CTTCTCGATC
BT 10	GGAGGTAGAA
BT 11	AATCTGTGGG
BT 12	CGACGATCAT
047-27251	

DNA Oligomer (10) set I (Tm30-F)

No.	Sequence
BT 21	CATGGTAACG
BT 22	CACCACTGTT
BT 23	CCGGATTTGT
BT 24	CAACAACTGC
BT 25	CAAGAACGAC
BT 26	CATCCACCAT
BT 27	GTACACCGTA
BT 28	CGTGTTTGGT
BT 29	CAACAAGGAC
BT 30	CAAGGAGCTA
BT 31	GGACTACAAG
BT 32	GGTCTTGAAG
044-27261	

DNA Oligomer (10) set II (Tm32-A)

No.	Sequence
BT 41	GAGCTGGTTC
BT 42	CAGAGTTGCG
BT 43	CGCCGCATTA
BT 44	CGGCATGTTC
BT 45	GGTGGATCGT
BT 46	GTCCGCATCA
BT 47	CAAGGCGAGT
BT 48	CGACGGTCAT
BT 49	GTCCGCAGAA
BT 50	CGTGGAACCA
BT 51	TCCCCCAGTT
BT 52	CTCCAATGGG
041-27271	

DNA Oligomer (10) set II (Tm32-B)

No.	Sequence
BT 61	GAGACGACCA
BT 62	ACCCGGTCAT
BT 63	CGGTCGACAA
BT 64	GGTCCAAGGT
BT 65	CGCCGGTAAA
BT 66	GGAGGACTTC
BT 67	GCTGACGCAA
BT 68	CGACAGGCTA
BT 69	TCGCGAAGGT
BT 70	GCCCTACCAA
BT 71	GAAGGAGCTC
BT 72	CGACATTGCG
048-27281	

DNA Oligomer (10) set II (Tm32-C)

No.	Sequence
BT 81	GTCCATTGGG
BT 82	CGCCGATGAT
BT 83	CGTGAATCCG
BT 84	CCAGAAAGCG
BT 85	GGACAAAGGG
BT 86	CGTGCCACTA
BT 87	CGAGACGACT
BT 88	CCAGGGTTTG
BT 89	CGGATTGTCG
BT 90	CGGAGCTGAT
BT 91	CGCCAAATGG
BT 92	GATCGGCGAA
045-27291	

DNA Oligomer (10) set II (Tm32-D)

No.	Sequence
CT 01	CACCCCATCA
CT 02	CCTCGCGATT
CT 03	GGAGAATGCG
CT 04	CGTGTTGGCA
CT 05	CTGCCAGCAA
CT 06	CGGCATAGTC
CT 07	CGACCTCAAG
CT 08	CCACGCATGT
CT 09	CACCGGTATC
CT 10	CGCCATCAAC
CT 11	GAAGCCATGG
CT 12	TTGGGGTGGT
048-27301	

DNA Oligomer (10) set II (Tm32-E)

No.	Sequence
CT 21	GGCCAATTCG
CT 22	CTCCGGTCAA
CT 23	CGTGCTATGG
CT 24	GGCCCATGAA
CT 25	GCGGATCAAG
CT 26	CCTGGGTCAT
CT 27	CGTGGAATCG
CT 28	CGCTATCCCA
CT 29	GTGCGGTAAG
CT 30	GAACCCGGAA
CT 31	CAGCAACCCA
CT 32	GGACGGAACT
045-27311	

DNA Oligomer (10) set II (Tm32-F)

No.	Sequence
CT 41	CCGGTTCACT
CT 42	CCTGGGTATC
CT 43	CACCTTCTCG
CT 44	GGACGAGAAC
CT 45	CGTCGCAAAG
CT 46	CCCTTTGGAG
CT 47	GGTCTGCCTA
CT 48	AAGCACGCAC
CT 49	ACTGTCCGCA
CT 50	CGCTAGGATC
CT 51	GTTCGCGAAG
CT 52	CGCCACTGAA
042-27321	

DNA Oligomer (10) set II (Tm32-G)

No.	Sequence
CT 61	CATCAACCCG
CT 62	GATGACGGAC
CT 63	AGGCGTTGAC
CT 64	CAGCTTCGAG
CT 65	GGACACGATG
CT 66	CTGCTGTCAC
CT 67	CCTGTCCATG
CT 68	CCTCACTGGT
CT 69	CAAGGAGTGC
CT 70	CCCGAAACTG
CT 71	CGCTGACTTC
CT 72	GGCCAAGAAG
049-27331	

DNA Oligomer (10) set III (Tm34-A)

No.	Sequence
CT 81	CTGCCGTCGA
CT 82	CGCCGTACGT
CT 83	GTGCCGAGCA
CT 84	CGCCACGGAA
CT 85	CGAGGCATGG
CT 86	CCAGCATGGG
CT 87	GCGCCTACGA
CT 88	CCGCGATACG
CT 89	CGCCCTCGAA
CT 90	CCCCGGTCAT
CT 91	CCCTGCGCTA
CT 92	CATCGGTGGG
043-27351	

DNA Oligomer (10) set III (Tm34-B)

No.	Sequence
DT 01	CGACGGTAGG
DT 02	GGGCGGTGTA
DT 03	GCGCTGTGCA
DT 04	CCTCGCAGCA
DT 05	GGTGACGCCA
DT 06	CGCCATGGCA
DT 07	CGTCACTGCG
DT 08	CCGGCGAACT
DT 09	GGAGGAAGCG
DT 10	GTGCCCGCTA
DT 11	CTACGGGCGT
DT 12	GAAGGCGGCA
040-27361	

DNA Oligomer (10) set III (Tm34-C)

No.	Sequence
DT 21	CAAGCGAGCG
DT 22	CGCCTGTTGG
DT 23	CGGAGCAGCA
DT 24	CCACGCGTAC
DT 25	GTCCACGGCA
DT 26	GTGCAAGGCG
DT 27	GGTCGCGGTT
DT 28	CGTCTCAGGG
DT 29	CCTCCCGGTT
DT 30	GGGAGAAGGG
DT 31	GCCCGGTGAT
DT 32	GGTGATCCCG
047-27371	

DNA Oligomer (10) set III (Tm34-D)

No.	Sequence
DT 41	CCGCCGAAAG
DT 42	GAACGTCGCG
DT 43	GGTGACGCCA
DT 44	GGGAGGAGTC
DT 45	CATGGGGTGC
DT 46	CGCCGTTGAC
DT 47	GCCCATCCAG
DT 48	GATCGGGCGA
DT 49	GGCTTGCGGT
DT 50	GGGAGTCCCA
DT 51	CCCCATGCTC
DT 52	CAGCCTGGAC
044-27381	

DNA Oligomer (10) set III (Tm28-A)

No.	Sequence
AT 01	GTTCAAGAAG
AT 02	CGACTTTGTA
AT 03	TCTCAATGTC
AT 04	AATCCGTCTA
AT 05	CGAGATACAT
AT 06	CGCTTGTAAA
AT 07	CATCGAACAA
AT 08	CATCACGAAT
AT 09	ATGGAAAACG
AT 10	CATGGATATC
AT 11	CAACGAAGAA
AT 12	CAAGCAATCA
046-27341	

E. Mammalian Transfection Reagents

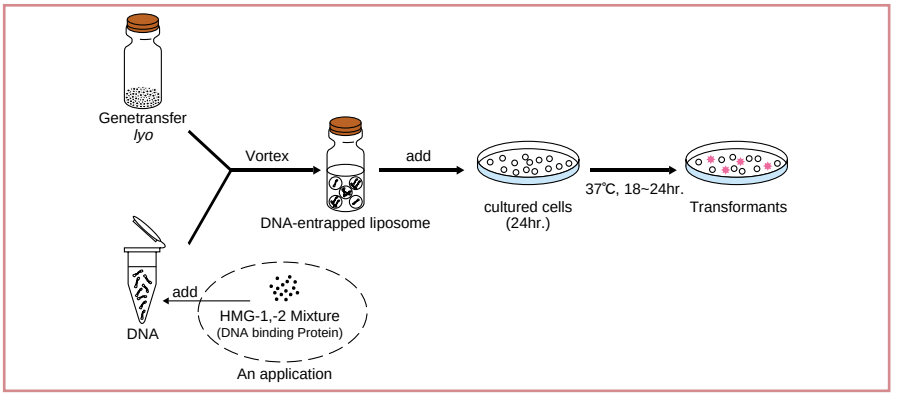
Genetransfer *lyo*

070-04441 5 vial × for 0.2 mL (0.2μmol total lipids)
2-10℃, Lyophilized

Genetransfer *lyo* consists of the cationic liposome TMAG and other neutral lipids DLPC and Dioleoylphosphatidylethanolamine (DOPE) (molar ratio is 1:2:2, respectively). Best transfection efficiency is available. Genetransfer *lyo* forms MLV (Multilamellar Vesicle) that is suitable for transfection of DNA to cultured mammalian cells. It is a large advantage to attempt the stabilization of the DNA that took in and introduced DNA between MLV.

Features :

1. High transfection efficiency (i.e., CHO-K1 cell lines)
2. Low cytotoxicity
3. Work well even presence of serum



Ref.: Koshizaka, T., *et al., J. Clin. Biochem. Nutr.*, **7**, 185 (1989).

[Related Products]

Genetransfer [074-03621 (1mL)]
HMG-1,-2 Mixture [080-07041 (1mg (1mL))]

Transome™

208-14093 200μL
202-14091 1 mL
2-10℃, Liquid

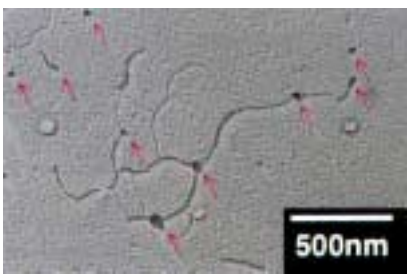
Transome™ is a SUV (Small Unilamellar Vesicles) liposome[1)] reagent, composed of the cationic lipid *N*-[3-[2-[1,3-bis(oleoyloxy)] propoxycarbonyl]propyl]-*N,N,N*-trimethylammonium iodide (YKS-220) and the neutral lipid DOPE in the ratio of 1:5. There are many reports that the transfection efficiency of DNA into cultured mammalian cells is high[1)-3)].

Features :

1. High transfection efficiency (i.e., CHO[2)], COS, HepG2 cell lines)
2. Low cytotoxicity
3. Low price (1 vial of Transome provides 50-200 transfections on 35 mm plate.

Storage : Keep at 2-10℃ in the dark. Avoid freezing.

Ref.:[1]Obika, S., *et al., Bioorg. & Med. Chem. Lett.*, **7**, 1817-1820 (1997)/[2]Yu, W., *et al., J. Biochem.*, **125**, 1034-1038 (1999)/[3]Obika, S., *et al., Biol. Pharm. Bull.*, **22**(2), 187-190 (1999)



Transome-plasmid PGV-C complex
(↖ : Transome)

13. Histochemistry

A. Xylene Substitutes

Lemosol A and Lemosol are aromatic solvents used as xylene substitutes for cleaning and deparffinizing steps in staining and tissue processing.

[Features]

- Far less toxic than xylene
- The volatilization is equal to that of xylene.

Lemosol® A (Ace)

120-04411 1L
126-04413 3L
128-04417 18L
Dark, Liquid

Flash point: 36.5℃
LD_{50} (rat, oral) : 5g/kg
Terpenes based solvent derived from bark of eucalyptus and pine.
The main ingredient is pinene.

Lemosol®

122-03991 1L
128-03993 3L
120-03997 18L
RT, Liquid

Limonene-based solvent derived from citrus.

B. Embedding Medium

Pathoprep®

Paraffin for embedding tissue samples. It is composed of refined paraffin and a polymer component, which facilitates permeation of the tissue.

[Features]

- Pellet type-easy to handle!
- Excellent permeation for all kinds of tissue
- Smoothly and consecutively thin sections by microtoming
- Flash point: 36.5℃, LD_{50} (rat, oral): 16.0g/kg

Pathoprep® 568
162-18961 12×500g
RT, Solid
mp: 56-58℃

Pathoprep® 580
165-19551 3×2kg
RT, Solid
mp: 58-60℃

C. Mounting Reagents
Mounting reagent, Softmout, containing Lemosol A which is xylene substitute

Softmount 550
197-11591 250mL
RT, Liquid
Viscosity (25℃): 550cps
Refractive index (20℃): 1.50

Softmount
199-11311 250mL
RT, Liquid
Viscosity (25℃): 750cps
Refractive index (20℃): 1.50

D. Stains
[Stain for Undecalcified Bone]

Villanueva Bone Stain Reagent
221-01351 10×500mg
RT, Solid
Villanueva Bone Stain Reagent is used for demonstrating osteoid in undecalcified, plastic-embedded, thin sections of bone. This reagent enables osteoid seams in undecalcified bone to identify.

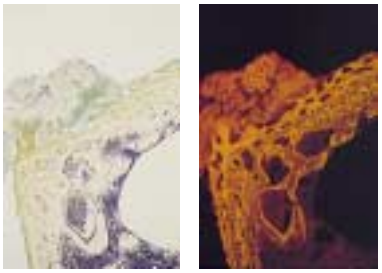


Figure: Rat thighbone (10μm) observed by light microscope (left) and fluorescent microscope (right).

[Results]

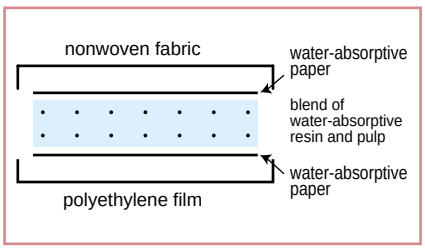
	light microscope	fluorescent microscope
osteoid	reddish purple	red
calcified bone	colorless-pale brown	yellowish green-green
cytoplasm	pale purple-pink	colorless-orange
nuclei	bluish purple	red
tetracycline	-	yellow
calcein	-	yellowish green

Preparation: Dissolve 500 mg of Villanueva Bone Stain Reagent in 100 mL of 70 % methanol.
Appearance : Powder and mass

Ref.: Villanueva, A. R., *et al., Stain Technology*, **49**, 1 (1974)/Villanueva, A. R., *et al., Am. J. Med. Technol.*, **43**, 536 (1979)

E. Absorbent

Labsheet™
121-04701 10 sheets
127-04703 10×10 sheets
RT, 30 cm×40 cm/sheet
A highly absorbent liner for any laboratory work surface. Each sheet holds 800-1,000 mL of water.



14. Immunology

A. Antibodies

Anti AGE*, MAb (Clone : 6D12)
340-90021 10μg (40μL)
-20℃, D/I, Liquid
*: Advanced Glycation End Products Contains 0.25 mg/mL of Anti AGEs-mouse monoclonal antibody (in PBS, pH 7.2) Purified by Protein A affinity chromatography from ascites fluid of BALB/c mice.
Isotype : IgG_1
Working Dilution :
ELISA [0.1~0.5μg/mL],
Immunohistochemistry [1:100]
Manufactured by TransGenic, Inc. (Kumamoto, Japan)

Anti AGE, MAb, Fab', Peroxidase Conjugated (Clone : 6D12)
347-90031 20μg
-20℃, D/I, Liquid
Purified by Protein G affinity chromatography.
0.1mg/mL of HRP-Fab' in Block Ace Buffer containing 0.1% Proclin
Working Dilution: ELISA [0.1-0.5μg/mL], Immunohistochemistry [2μg/mL]
Manufactured by TransGenic, Inc. (Kumamoto, Japan)

Anti Human Activated Caspase-3 (CPP32), MAb (Clone : CS-3)
015-18121 1mL
-20℃, D/I, Liquid
See 1-B. Apoptosis-Antibodies

Anti Human Activated Caspase-3, Rabbit
010-17331 100μL
-20℃, D/I, Liquid
See 1-B. Apoptosis-Antibodies

Anti Human Fas, MAb (Clone: APO1-3)
010-16351 100μg (1mL)
2-10℃, Liquid
See 1-B. Apoptosis-Antibodies

Anti Human Fas, MAb (Clone: SM1/1)
013-16341 100μg (1mL)
2-10℃, Liquid
See 1-B. Apoptosis-Antibodies

Anti Human Fas, MAb (Clone: SM1/23)
017-16361 100μg (1mL)
2-10℃, Liquid
See 1-B. Apoptosis-Antibodies

Anti Human Fas, Rabbit
019-16181 100μL
-20℃, Liquid
See 1-B. Apoptosis-Antibodies

Anti Mouse Fas, Rabbit
015-17261 100μL

-20℃, Liquid
See 1-B. Apoptosis-Antibodies

Anti Rat Fas Ligand, Rabbit

012-17271 100μL
-20℃, Liquid
See 1-B. Apoptosis-Antibodies

Anti Rat Glutamate Transporter (GLT-1), Rabbit

015-16421 200μg (200μL)
-20℃, D/I, Liquid
Purified by Protein A affinity chromatography from antisera and prepared in PBS solution. Contains no preservatives and stabilizers.
Isotype : IgG
Reacts with rat and bovine glutamate transporter.
Working Dilution :
Westernblot [1:300~1:500],
Immunohistochemistry [1:300]
Ref.: Pines, G., *et al., Nature*, **360**, 464 (1992)/Rothstein, J.D., *et al., Neuron*, **13**, 713 (1994).

Anti Rat Glutamate Transporter (EAAC1), Rabbit

019-17281 100μg
-20℃, D/I, Lyophilized
Purified by antigen affinity chromatography from antisera and prepared in lyophilized from in PBS solution. Contains 0.1% BSA as a stabilizers and sodium azide as a preservative.
Reacts with rat glutamate transporter (GLAST). Species cross-reactivity has not been tested. This immunogen peptide is 100% homologous in mouse, rat, human and bovine.
Working Dilution :
Westernblot [1:100~1:1,000],
Immunohistochemistry [1:100~1:500]
Ref.: Rothstein, J.D., *et al., Neuron*, **13**, 713 (1994)/Rothstein, J.D., *et al., Ann., Neurol.*, **38**, 73 (1995).

Anti Rat Glutamate Transporter (GLAST), Rabbit

016-17291 100μg
-20℃, D/I, Lyophilized
Purified by antigen affinity chromatography from antisera and prepared in lyophilized from in PBS solution. Contains 0.1% BSA as a stabilizer and sodium azide as a preservative.
Reacts with rat glutamate transporter (EAAC1). Cross-reactivity among species has not been tested. This immunogen peptide is 100% homologous in mouse, rat, rabbit and human.
Working Dilution :
Westernblot [1:100~1:1,000],
Immunohistochemistry [1:100~1:500]
Ref.: Rothstein, J.D., *et al., Neuron*, **13**, 713 (1994)/Rothstein, J.D., *et al., Ann., Neurol.*, **38**, 73 (1995).

Anti soluble Guanylate Cyclase (sGC), MAb (Clone: mAB3221)

019-17801 20μg (40μL)
-20℃, D/I, Liquid
Purified by Protein G affinity chromatography from culture supernatant and prepared in glycine-Tris solution (pH 7.4). Contains no preservatives and stabilizers.
Isotype : IgG_1
Specifically reacts with rat, bovine and human sGC, and strengthens in the reactivity on activation of sGC by NO, probably, due to the conformational changes of the enzyme and it's associated antibody-antigen complex.
Working Dilution :
Westernblot [1:5,000],
Immunofluorescence [1:250]
Ref.: Tsuyama, S., *et al., FEBS Lett.*, **455**, 291 (1999).

Anti soluble Guanylate Cyclase (sGC), MAb, NO insensitive (Clone: mAB28131)

017-18201 20μg (40μL)
-20℃, D/I, Liquid
Purified by Protein G affinity chromatography from culture supernatant and prepared in glycine-Tris solution (pH 7.4). Contains no preservatives and stabilizers.
Isotype : IgG_1
Specifically reacts with rat, bovine and human β-subunit of sGC, but not strengthened in the reactivity on activation of sGC by NO.
Working Dilution :
Westernblot [1:5,000],
Immunofluorescence [1:250]

Anti H. pylori HSP60, MAb (Clone : H9)

014-16991 200μg (200μL)
2-10C, Liquid
Purified from ascites fluid of BALB/c mice using immunoglobulin separation kit and prepared in Tris-HCl buffered solution containing 0.01% NaN_3 as a preservative.
Isotype : IgG_{2a}
Cross-reacts with extracts of other bacteria including *P. aeruginosa, E. coli and V. cholerae.*
Working Dilution :
Western blot [1:100~1:10,000].

Anti Human HSC73 (Heat Shock Cognate), MAb (Clone: NT22)

018-15551 1mL
-80℃, D/I, Cell culture supernatant.
Contains no preservatives and stabilizers.
Isotype : IgM
Specific for human, mouse, and bovine HSC73 ; does not recognize HSP72.
Working Dilution :
Westernblot [-1:100],
Immunohistochemisetry [-1:10]

Anti Human HSP27, MAb (Clone : mH3)

018-17251 5mL
-80℃, D/I, Cell culture supernatant
Contains no preservatives and stabilizers.
Isotype : IgG_1
Specific for human and mouse HSP27; does not react with HSP27 of protist.
Working dilution :
Immunofluorescence [1:1~1:4]
Westernblot [1:1~1:8]

Anti Mycobacterial HSP65, MAb (Clone : B97)

018-14071 200μg
2-10℃, Lyophilized
Purified by Protein A affinity chromatography from ascites fluid of BALB/c mice and prepared in lyophilized form containing 4% gelatin and 5% saccharose as stabilizers, and no preservative.
Isotype : IgG_{2a}
Specific for mycobacterial HSP 65kDa. Rarely cross-reacts with mammalian

and *E. coli* GroEL 65kDa protein.
Working Dilution :
Westernblot [1:1,000~1:5,000],
Immunohistochemistry
[1:200~1:1,000]

Anti Human HSP 90α, MAb (Clone : K41233)

016-17051 200μg
-20℃, D/I, Liquid
Fractionated by ammonium sulfate saturated precipitation from ascites fluid of BALB/c mice and prepared in saline solution containing 0.1% NaN_3 as a preservative.
Isotype : IgG_{2a}
Protein : 1mg/mL
Reacts to amino acid residues 216-285 of human HSP90α.
Working Dilution :
Westernblot [1:200]
ELISA [1:10,000]
Immunohistochemistry [1:800]

Anti Human HSP90β, MAb (Clone : K3701)

013-17061 200μg
-20℃, D/I
Fractionated by ammonium sulfate saturated precipitation from ascites fluid of BALB/c mice and prepared in saline solution containing 0.1% NaN_3 as a preservative.
Isotype : IgM
Protein : 1mg/mL
Reacts to amino acid residues 185-289 of human HSP90β.
Working Dilution :
Westernblot [1:200]
ELISA [1:10,000]
Immunohistochemistry [1:800]

Anti Human Presenilin-1 (N-terminus), Goat

013-17321 1mg for 200μL
-20℃, Liquid
Purified by sodium sulfate precipitation from the antisera and prepared in PBS solution containing 0.05% NaN_3 as a preservative.
Reacts with amino acid 14-33 of N-terminus of human presenilin-1.
Working Dilution :
Immunohistochemistry
[1:100~1:1,000]

Anti Human Retinoid X Receptor-β, MAb (Clone : MOK13-17)

012-17031 100μg
-20℃, D/I, Ascites
Ascites prepared in PBS solution containing 0.05% NaN_3 as a preservative.
Protein : 2mg/mL
Isotype : IgG_1
Reacts to human and mouse Retinoid X Receptor-β (-50kDa) ; does not react to Retinoid X Receptor-α nor -β.

Anti Mouse IL-5 Receptor, Rat MAb (Clone : H7)

017-17341 100μg (200μL)
-20℃, D/I, Liquid
Purified by Protein G affinity chromatography from cell culture supernatant and prepared in saline solution. Contains no preservatives and stabilizers.
Isotype : $IgG_{2a\cdot k}$
Specific to mouse IL-5 receptor.
Working Dilution :
Flow cytometry [1:500]
Neutralization :
Completely inhibits the proliferation of Y16 cells in the presence of 0.1U/mL of mouse IL-5 at 2μg/mL.

Anti Mouse IL-5 Receptor, Rat MAb (Clone : T21)

014-17351 100μg (200μL)
-20℃, D/I, Liquid
Purified by Protein G affinity chromatography from ascites fluid of BALB/c, nu/nu mice and prepared in saline solution. Contains no preservatives and stabilizers.
Isotype : IgG_1
Specific to mouse IL-5 receptor.
Working Dilution :
Flow cytometry [1:500]
Neutralization :
Completely inhibits the proliferation of Y16 cells in the presence of 0.1U/mL of mouse IL-5 at 0.08μg/mL.

Anti Mouse RP105, Rat MAb (Clone : RP/14)

014-16251 200μg for 1mL
2-10℃, Lyophilized
Fractionated by ammonium sulfate saturated precipitation from ascites fluid of CB17 *scid/scid* mice and prepared in lyophilized form in 20mM HEPES solution (pH7.2) containing 4% gelatin and 5% saccharose as a stabilizer.
Isotype : $IgG_{2a\cdot k}$
Recognizes RP105 Ag expressed on mouse mature B cells.
Working Dilution :
Immunofluorescence [1~5μg/test]
Immunoprecipitation
[10~30μg/ sample]

B. Cell Separation

Nylon Fiber Column T

147-06721 10 syringes × 0.5g
RT in the dark
Applicable to mouse T cell purification
Cell recovery : 13~25%
B cell contamination: less than 15%

Nylon Fiber Column T (L-Type)

143-07041 10 syringes × 1.0g
RT in the dark
Applicable to human, rabbit and rat T cell purification
Cell recovery : 25~35%
B cell contamination: less than 15%

Note: These Nylon Fiber Column T are sterilized by gamma-ray radiation.

Ref.: Julius, M.H., *et al.*, A rapid method for the isolation of functional thymus-derived murine lymphocytes, *Eur. J. Immunol.*, **3**, 645-649 (1973).

15. Protein Quantitation

A. Standards

Ready-to-use Standard for Total Protein Determination

measurements

Following protein Standard Solutions are used for determination of protein by Lowry method, BCA method, etc. Since they are highly purified and are got correlation data with various kinds of protein determination methods per each lot, there is no lot-to-lot difference. This solution is recommended to accurately determine protein concentration.

Protein Standard, IgG Solution (10mg/mL)

160-18881 5 × 1mL

2-10℃, Liquid

Appearance :
5μmol/L Phosphate buffer (pH 7.4), containing 30 % glycerin

Correlation coefficient :
min. 0.990 between UV absorption- (O.D. 280nm), Lowry- (750nm), BCA-, Bradford- (595nm), or DC Protein-method (750nm).

Protein Standard, BSA Solution (10mg/mL)

163-18871 5 × 1mL

2-10℃, Liquid

Appearance : Containing 30% glycerin.
SDS-PAGE: 99+%

Correlation coefficient :
min. 0.990 between UV absorption method, Lowry method, BCA method, Bradford method, or DC Protein method.

16. Reagent Kits

A. ELISA Kits

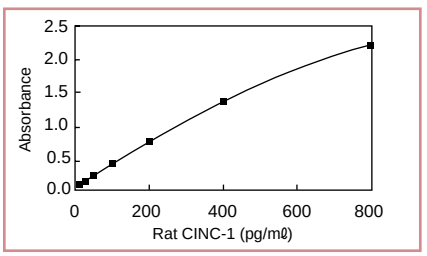
ELISA Kits for Animals

Rat CINC-1 ELISA Kit *wako*

297-55401 96 tests

2-10℃

Cytokine-induced neutrophil chemoattractant (CINC) is a group of CXC chemokine, released from rat renal epithelial cell by the stimulation of IL-1. This factor is known to act as a chemotactic factor for neutrophil, and participate in a variety of inflammatory diseases. Measurement of the factor in rat serum, plasma and cell culture supernatant with Rat CINC-1 ELISA Kit *wako*, constructed as a sandwich ELISA format using two kinds of specific polyclonal antibodies, is critical for an understanding of inflammation.



[Features]

Sensitivity : Dynamic range; 12.5-800pg/mL

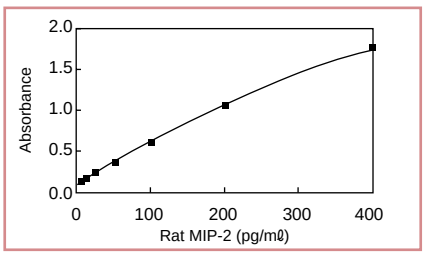
Specificity: This kit is able to measure rat CINC-1. Little cross-reactivity exists with rat CINC-2α, CINC-2β, nor MIP-2.

Rat MIP-2 ELISA Kit *wako*

293-55501 96 tests

2-10℃

Macrophage inflammatory protein-2 (MIP-2), alternatively referred to CINC-3, is a CXC chemokine of relative molecular mass 7.9k containing 73 amino acid residue. This factor is known to act as a chemotactic factor for neutrophil, and participate in a variety of inflammatory diseases. Measurement of the factor in rat serum, plasma and cell culture supernatant with Rat MIP-2 ELISA Kit *wako*, constructed as a sandwich ELISA format using the polyclonal antibodies, is critical for an understanding of inflammation.



[Features]

Sensitivity : Dynamic range;6.25-400pg/mL

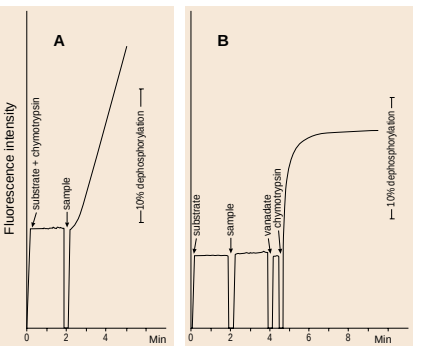
Specificity: This kit is able to measure rat MIP-2. Little cross-reactivity exists with rat CINC-1, CINC-2α, nor CINC-2β.

[Quenched Fluorescence Substrate Assay of Protein Tyrosine Phosphatase (PTP) Activity]

Fluorospark™ PTP Assay Kit

299-55601 100 tests

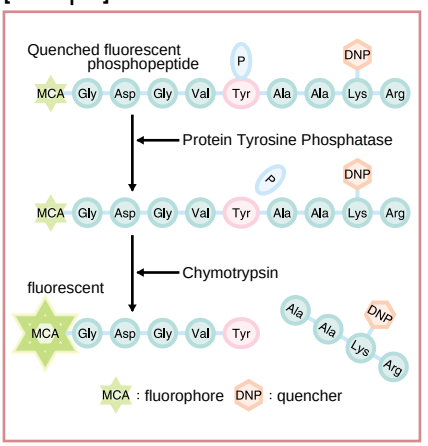
-20℃



Kinetic experiment Endpoint experiment

Measurement of PTP activity in cytoplasmic fraction of osteoblast like cell line (Data was provided by Dept. of Dental Pharmacology, Hokkaido Univ. School of Dentistry (Japan))

[Principle]



Phosphorylation and dephosphorylation of protein tyrosine in signal transduction is thought to play a critical role in regulation of physiological phenomena as immune response, oncogenesis, differentiation, apoptosis, and cell proliferation. Many tyrosine kinases have been cloned and characterized to understand signaling pathways by phosphorylation, whereas, little is known about the roles of PTP. Our Fluorospark™ PTP Assay Kit consists of all the essential buffers and reagents including quenched fluorescent phosphrylated peptide substrate for PTP, allowing a homogeneous fluorescent PTP activity assay with a fluorescence microplate reader and a standard fluorometer. The sensitivity by the standard assay protocol is at 1 pmol or the less, compatible to those of the assay using radio actives.

[Features]

1. High sensitive measurement of PTP activity at sub-pico moles, compatible to that with RI labeled peptide substrate.
2. Allowing a homogeneous assay of PTP, which is simple, rapid, and applicable to high throughput screening assay as well as that using fluorescence microplate reader.
3. Allowing the PTP assay even in the presence of phosphate because of indirect measurement of released phosphate.

[Kit Contents]

1. Substrate Solution (200μmol/L) 110μL
2. Enzyme reaction buffer 1.5mL
3. 0.2%(w/v) Chymotrypsin solution 220μL
4. Calibrator (containing MCA-Gly-Asp-Gly-Val-Tyr) 40μL
5. Stop solution (10mmol/L sodium vanadate) 220μL

Ref.:Nishikata, M., *et al.*, A phosphotyrosine-containing quenched fluorogenic peptide as a novel substrate for protein tyrosine phosphatases, *Biochem. J.*, **343**, 385-391 (1999).

B. Endotoxin Detection Kit

Limulus PS Single Test *wako*

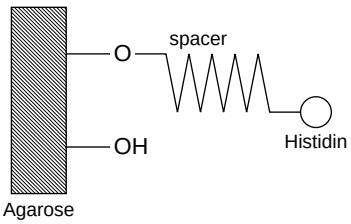
299-54501 20 tests

2-10℃

This kit is composed of LAL ES reagent and Pyrosep* suspension. Affinity concentration of endotoxin from sample is done with Pyrosep resin column chromatography packed in capillary as the first step, followed by measurement of endotoxin by time resolved turbidmetric assay using LAL ES reagent, which allows measurement of endotoxin in much smaller amount than conventional methods do, even in fatty samples such as fat-soluble vitamins.

*: Pyrosep is an affinity resin specific to endotoxin, which is composed of water-insoluble support and histidine as a ligand conjugated through a spacer. This resin, developed by Tanabe Pharmaceuticals, Ltd., is useful for removal of endotoxin from macromolecule solutions and complicated solutions.

[Schematic figure of Pyrosep]



Condition of absorption : pH3～8, $\mu \leqq 0.1$
Capacity of absorption : 0.31mg(*E.coli* UKT-B, LPS)/g absorbant
Dissociation constant(Kd): 7.3×10^{-13}M(*E.coli* UKT-B, LPS)

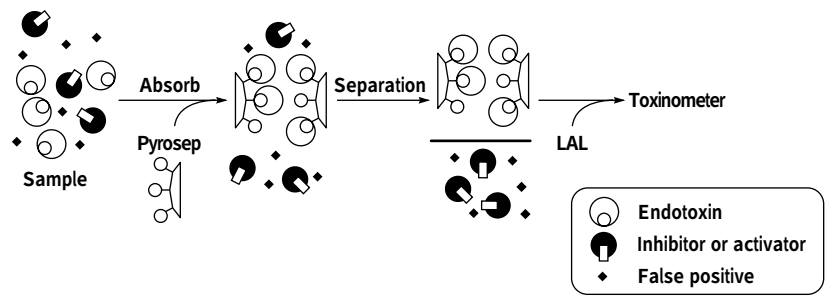
[Related product]

Limulus Test Tube-S with Aluminum Cap

292-32751 8 × 10 tubes

RT

[Principle]



17. Ames Mutagenicity Test System

A. Positive Controls

2-Aminoanthracene [2-Anthramine][2AA], 90.0+% (Ti)

017-06851 1g
RT, Solid
MW: 193.24 ($C_{14}H_9NH_2$)
CAS: 613-13-8
mp : 235-240℃
Solubility : Soluble in EtOH and dimethylformamide

Benzo[α]pyrene [BaP] [1,2-Benzopyrene], 98.0+% (UV)

029-01111 100mg
025-01113 1g
RT, Solid
MW: 252.31 ($C_{20}H_{12}$)
CAS: 50-32-8
mp : 176-180℃
Solubility : Soluble in benzene, toluene, & xylene, slightly soluble in alcohol, and practi-cally insoluble in water.

3-Chloro-4-dichloromethl-5-hydroxy-2(5*H*)-furanone [MX], 98+% (HPLC)

133-11651
-20℃, D/1, Liquid
MW: 217.44 ($C_5H_2O_3Cl_3$)
CAS: 77439-76-0

2-(2-Furyl)-3-(5-nitro-2-furyl) acrylamide [AF-2], 98.0-102.0% (Ti)

066-01681 100mg
RT, Solid
MW: 248.19 ($C_{11}H_8N_2O_5$)
Solubility : Freely soluble in DMF, slightly soluble in EtOH, and practically insoluble in water.

Mitomycin C [MMC], 98.0+% (UV)

134-07911 10mg
2-10℃, Solid
MW: 334.33 ($C_{15}H_{18}N_4O_5$)
CAS: 50-07-7
DNA damaging agent
Potency : 850+μg/mg
Solubility : Slightly soluble in water, EtOH & acetone, and practically insoluble in ether.

4-Nitroquinoline-*N*-oxide [4NQO] 98.0+% (exN)

147-03421 1g
2-10℃, Solid
MW: 190.16 ($C_6H_4N(O) : CHCH : CNO_2$)
CAS: 56-57-5
mp : 154-157℃
Solubility : Soluble in ethanol, and slightly soluble in water.

III. ANALYTICAL CHEMISTRY

1. Chromatography

A. Thin Layer Chromatography

Chromato Sheet

036-17151 25 Sheets
RT

Chromato Sheet is a sheet of paper on which silica gel is entrapped.

[Features]

1. High resolution & reproducibility
2. Clipping, Writing and Filing as a paper
3. Meet no-detached silica gel powder
4. Applicable to blotting
5. Applicable to fluorometric detection

[Limitation]

1. Inapplicable to use color-producing reagents containing strong acids and to treat carbonization by heating at a high temperature

Size :20 × 20 cm
Weight : Approximately 7 g/sheet
Thickness: 0.3 mm

Silica gel : Wakogel C-500HG containing F254 fluorescent indicator.

Left : Chromato Sheet
Right : Silicagel 70F$_{254}$ Plate *wako*
Sample : Wakogel B tester, containing butter yellow, sudan2 and indophenol.
Developing solvent : Chloroform

Detection using Chromato Sheet at 254nm
Sample : Brucine, Oxypropyl Theophylline and Caffeine
Developing solvent : Chloroform (9)+Methanol (1)

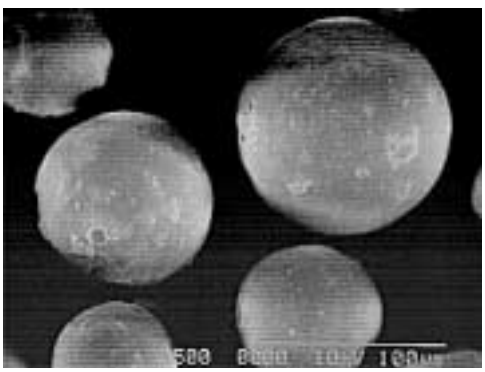
B. Columns and Media

[a] Open Column

Wakosil C Series

Full porous spherical silica gel for open column chromatography.

Silica gel chromatography has been used for many years as an important method to purify organic substances. Because of its simple structure and easy operation, open column chromatography has been widely used as separation method both in laboratories as well as industries. Traditionally, open column chromatography employs irregular type silica gel with a particle size of 50 to 100μm. When higher resolution is necessary, we offer Wakosil C-200 and C-300 that exhibit higher performance in the same operations as normal open column silica gel.



[Physical property and Specification of Wakosil C Series]

MW : 60.08 (SiO_2)
Pore size : 6 ± 1 nm
Pore Volume : 0.75 ± 0.10 mL/g
Specific Surface Area : 475 ± 25 m^2/g
Precipitation Volume : 1.5-1.8 mL/g
Loss on drying : 5.0 %-10 %

Wakosil C-300

237-01675 500g
235-01671 2kg
233-01677 10kg
RT

Particle Size : 40-64μm : 80+ %
<40μm : max. 10 %
>64μm : max. 5 %

Wakosil C-200

230-01665 500g
238-01661 2kg
236-01667 10kg
RT

Particle size : 64-210μm : 80+ %
<64μm : max. 10 %
>210μm : max. 5 %

[b] Solid-Phase Extraction Cartridges

Presep® -C Series

[Applications]

- Pretreatment for sample
- Concentration of a very small amount of hydrophobic components such as pesticides in a water system

High recovery from high polarity and metallic coordination compound such as Asulam, Oxine-Cu
Packing Volume : 200mg

Presep-C Agri (Short)

296-32651 10 × 5 cartridges
RT

Recovery Data (n=2)

Pesticides	Recovery Rate(%)	
Asulam	96.3	95.4
Oxin-Cu	94.2	97.2
MCPP	98.9	99.8
Thiuram	93.9	96.6
Siduron 1	101.1	102.7
Siduron 2	102.1	103.3
Iprodione	104.3	105.4
Chlorothalonil	101.2	100.7
Pencycuron	99.3	102.0
Bensulide	99.0	103.4

[Related products]

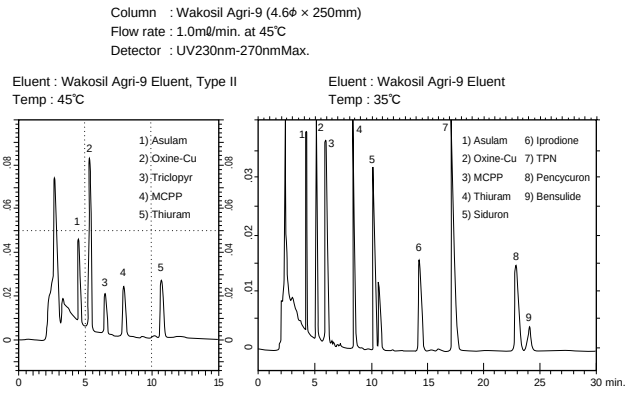
- Presep®-Agri (291-26851, 50 cartridges)
- Presep®-C Florisil (290-31951, 5 × 10 cartridges)
- Presep®-C C18 (ODS) (292-32251, 5 × 10 cartridges)
- Presep®-C Silica Gel (294-31851, 5 × 10 cartridges)
- Presep®-C Na_2SO_4 (296-32151, 5 × 10 cartridges)

[c] HPLC

Wakopak® WS Agri-9

Wakopak WS-Agri-9 packed with Wakosil Agri-9 can separate various pesticides used at golf courses simultaneously at HPLC analysis. Wakosil Agri-9 is cyanopropyl-bonded silica.
Particle Size : 5 μm

Analysis of river water adding pesticide standards



Wakosil Agri-9 Eluent, Type II for 4.6φ×250 mm

237-01631 1 L
RT

Asulam, Oxine-Cu, Triclopyr, Mecoprop (MCPP) and Thiuram are determined simultaneously in 15 min using Wakosil Agri-9 and the Eluent, Type II.

Wakosil Agri-9 Eluent for4.6φ×250 mm

235-01291 1 L
RT

Wakosil Agri-9 Eluent for 4.6φ×150 mm

238-01281 1 L
RT

Asulam, Oxine-Cu, Mecoprop (MCPP), Thiuram, Siduron, Iprodione, TPN, Pencycuron and Bensulide (SAP) are determined simultaneously in 25 min using Wakosil Agri-9 and the Eluent.

[Related products]

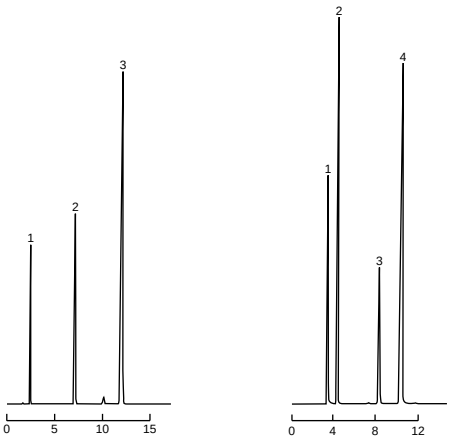
- **8Pesticides Mixed Std. Solution** (160-18401, 1 mL × 5 A) (Contains Asulam, Bensulide, Iprodione, MCPP, Pencycuron, Thiuram, TPN and Siduron. Each concentration is 100 μg/mL Acetonitrile)
- **Oxine-Cu Std. Solution** (159-01961, 1 mL × 5 A) (50 μg/mL methanol)
- **Triclopyr Std.** (202-12911, 200 mg)
- **Asulam Std.** (019-13521, 200 mg)
- **Bensulide Std.** (025-07671, 200 mg)
- **Iprodione Std.** (098-02381, 500 mg)
- **MCPP Std.** (136-10421, 200 mg)
- **Pencycuron Std.** (168-13681, 500 mg)
- **Siduron Std.** (199-10071, 200 mg)
- **Thiuram Std.** (204-11371, 200mg)

Wakopak® Handy ODS

[Features]

- High performance :
  N ≧ 12,000 (4.6ϕ ×150 mm), N ≧ 20,000 (4.6ϕ × 250 mm)
- Low cost like that of precolumn
- Validation data is attached to each column.
- Three different silica lots are available upon request.

Analysis of pyridine derivatives



Column : Wakopak® Handy ODS (4.6ϕ×250mm)
Eluent : CH_3CN/H_2O=60/40(v/v)
Flow rate : 1.0mℓ/min. at RT
Detector : UV254nm
Sample : 1. Uracil, 2. Benzene, 3. Naphthalene N=23,000 k'=3.89 α=2.07 S=1.07

Column : Wakopak® Handy ODS (4.6ϕ×250mm)
Eluent : CH_3CN/10mM K_2HPO_4(pH 7.0) =50/50 (v/v)
Flow rate : 1.0mℓ/min. at RT
Detector : UV254nm
Sample : 1. Pyridine, 2. Phenol, 3. Methyl Benzoate, 4. 3-Methylindole

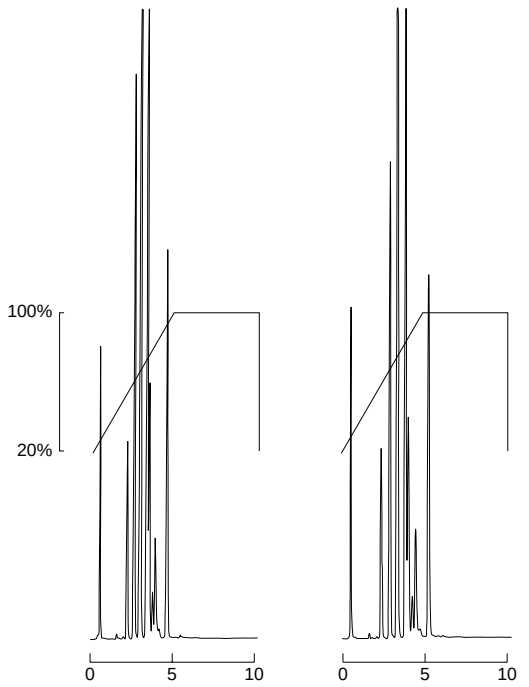
Wakopak® Combi ODS

[Features]

- Specially designed for HPLC analysis and purification of the synthetic substance in a short time of period for combinatorial chemistry
- Gradient volume can be proportionally scaled to column volume for maximum sample throughput.
- High-endcapped packing realizes superior separation from basic to acidic compounds.
- Strong retention and good separation in both of hydrophilic and hydrophobic mobile phase

Particle size : 5 μm
Pore size : 100 Å

Sample : Benzene derivatives
Mobile phase : A) H_2O, B) CH_3CN
Gradient : 0-5min (Bconc 20-100%), 5-10min (100%)
Column temperature : room temperature
Detector : uv 254nm sens. 0.512aufs



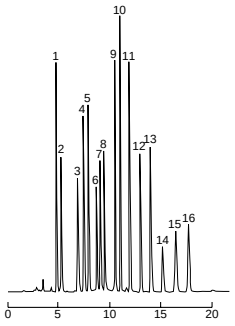
Column size : 4.6mmϕ × 50mm
Flow rate : 1.0mL/min
Inject : 20μL
Mixing volume : 6.8μL

Column size : 20mmϕ × 50mm
Flow rate : 18.9mL/min
Inject : 380μL
Mixing volume : 12mL

Wakopak® WS-PAHs

Wakopak® WS-PAHs packed with Wakosil-PAHs can separate polycyclic aromatic hydrocarbons (PAHs) at HPLC analysis. WS-PAHs that is ODS (C18) bonded silica in polymeric form is prepared for complete separation of a number of PAHs.
Particle size : 5 μm

Analysis of 16 components of PAHs described in Method 610, US EPA



Wakosil-PAHs (4.6×250mm)
Eluent : A;CH_3OH /H_2O=80/20 (v/v)
B;CH_3CN100% 0-4min. B:10% 4-7min. B:10-100% 7-25min. B:100%
Flow rate : 1.0mℓ/min.
Temperature : 30℃
Detector : UV 254nm
Sample : 1) Naphthalene 2) Acenaphthylene 3) Acenaphthene 4) Fluorene 5) Phenanthrene 6) Anthracene 7) Fluoranthene 8) Pyrene 9) Benzo[*a*]anthracene 10) Chrysene 11) Benzo[*b*] fluoranthene 12) Benzo[*k*] fluoranthene 13) Benzo[*a*]pyrene 14) Dibenz[*a,h*] anthracene 15) Benzo[*ghi*]perylene 16) Indeno[1.2.3-*cd*] pyrene

[Related products]

Following PAHs Standards are available.
Acenaphthene, Acenaphtylene, Anthracene, Benzo [a] an-

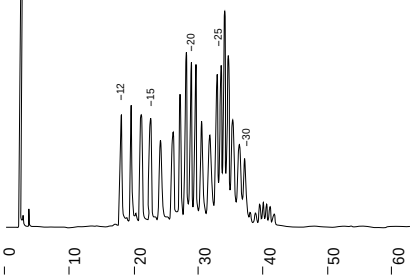
thracene, Benzo [b] fluoranthene, Benzo [k] fluoranthene, Benzo [a] pyrene, Benzo[ghi]perylene, Chrysene, Dibenz [a,h] anthracene, Fluorene, Fluoranthene, Indeno [1,2,3-cd] pyrene, Naphthalene, Phenanthrene and Pyrene.

Wakopak® WS DNA

Synthetic oligo-DNA is widely used as probe and primer for genetic engineering. As a method of purification, reversed-phase HPLC is the most simple procedure because of high speed, high purity without desalting. Wakopak® WS DNA containing Wakosil DNA makes it possible to separate various synthetic oligo-DNA at HPLC analysis.

Particle size : 5 μm

Column : Wakosil DNA (4.6×150mm)
Eluent : A:0.1M TEAA B:CH_3CN/0.1M TEAA = 50/50(v/v)
Gradient:12-20%B in 60min
Flow rate: 1.0mℓ/min at R.T.
Detector : UV 260nm, 0.16 AUFS
Sample : Oligo dA mixture (12-30mer)



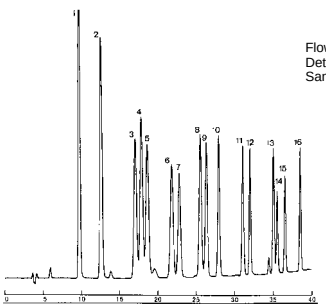
Separation of Oligo dA mixture

Wakopak® WS DNPH

A novel separation of aldehyde and ketone derivatives from 2,4-Dinitrophenylhydrazine (DNPH) using a column packed with Wakosil-DNPH. Simultaneous detection of 16 kinds of DNPH-aldehydes including DNPH-n-butylaldehyde and DNPH-isobutylaldehyde can be detect with combination of the Eluent A and B which are specially prepared.

Separation of 16 components of DNPH Aldehydes

Column : Wakosil DNPH (4.6×250mm)
Eluent : A ; Wakosil DNPH Eluent A
B ; Wakosil DNPH Eluent B
0-16min. B ; 10%
16-35min. B ; 10-90%
35-45min. B ; 90%
Flow rate : 0.6mL/min. at 37C
Detector : UV 360nm, 0.016AUFS
Sample : 1)Formaldehyde-2,4-DNPH
2)Acetaldehyde-2,4-DNPH
3)Propionaldehyde-2,4-DNPH
4)Acrolein-2,4-DNPH
5)Acetone-2,4-DNPH
6)Isobutyraldehyde-2,4-DNPH
7)*n*-Butyraldehyde-2,4-DNPH
8)Crotonaldehyde-2,4-DNPH
9)Isovaleraldehyde-2,4-DNPH
10)*n*-Valeraldehyde-2,4-DNPH
11)Benzaldehyde-2,4-DNPH
12)Hexaldehyde-2,4-DNPH
13)*o*-Tolualdehyde-2,4-DNPH
14)*m*-Tolualdehyde-2,4-DNPH
15)*p*-Tolualdehyde-2,4-DNPH
16)2,5-Dimethylbenzaldehyde-2,4-DNPH
each 0.625μg/mL (as aldehyde, ketone)



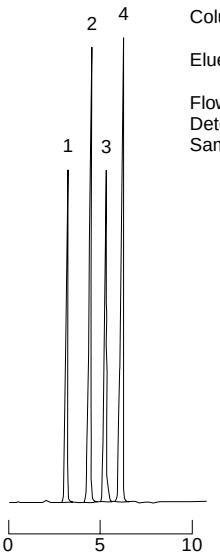
[Related Products]
Wakosil DNPH Eluent A (233-01611, 1L)
Wakosil DNPH Eluent B (230-01621, 1L)
CAS : 67-56-1

Toxicity : TDLo (human-man, orl) 9450μL/kg
mp : -97.8℃
Flash point : 11℃ (Flash Point Tester, Tag Closed Cup)

Wakopak® Wakosil-II 5CN

Particle size: 5μm
Available column size : 4.0ϕ × 150mm, 4.0ϕ × 250mm, 4.6ϕ × 150mm, and 4.6ϕ × 250mm

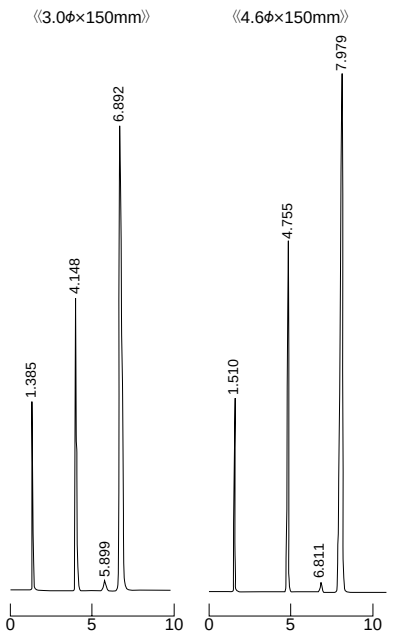
Column : Wakoil-II 5CN (4.6ϕ×150mm)
Eluent : CH_3CN/H_2O =35/65(V/V)
Flow rate: 1.0mL/min. RT
Detector : UV254nm
Sample : 1. Benzyl Alcohol
2. Acetophenone
3. *p*-Tolualdehyde
4. Anisole



Wakopak® Wakosil-II C-18, 3mmϕ series

	Wakosil-II 3C18 series			Wakosil-II 5C18 series		
Particle size	3μm			5μm		
Pore size	12nm					
Type	HG	RS	AR	HG	RS	AR
3.0ϕ× 75 mm	○	○	○	—	—	—
3.0ϕ× 150 mm	○	○	○	○	○	○
3.0ϕ× 25 mm	—	—	—	○	○	○

[Column : Wakosil-II 5C18HG]



Flow rate : 0.5mL/min. 1.0mL/min.
Sample : 2μL 5μL
Eluent : CH_3CN/H_2O=60/40 (V/V)
Sample : ①Uracil 0.77mg ②Benzene 145μL
③Naphthalene 20.0mg in 100mL
Detector : UV 254nm 0.16aufs. RT

Active Carbon-impregnated Silicagel

019-11941 10g
RT, Solid
For Dioxin Determination
A packing for cleanup used for microanalysis of polychlorinated dibenzo-p-dioxins (PCDDs) and polychlorinated dibenzofuran (PCDFs)

Sea Sand, Methanol Washed, 425-850μm (20-35mesh)

197-11655 500g
RT, Solid
425-850μm (20-35mesh) : 70+ %
Applicable to column chromatography
Appearance : Grains
[Related Products]

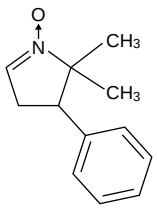
- Sea Sand, 850-1400μm (14-20mesh) (190-11405, 500g)
- Sea Sand, 425-850μm (20-35mesh) (196-08175, 500g)
- Sea Sand, 300-600μm (30-50mesh) (195-11411, 5kg)(197-11415, 500g)

2. ESR

A. Spin Trapping

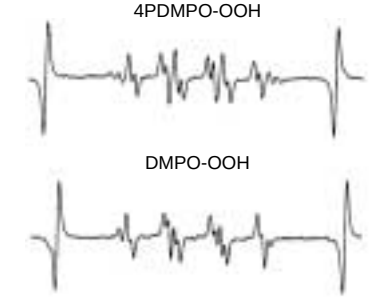
5,5-Dimethyl-4-phenyl-1-pyrroline N-Oxide, 98.0+% (HPLC)

(4PDMPO/DMPPO)
048-26181 1g
2-10℃, Solid

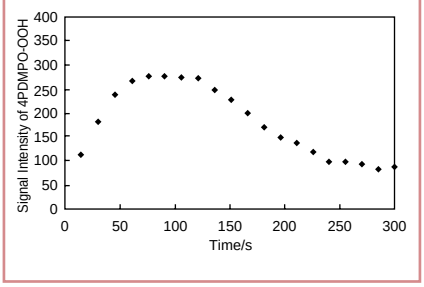


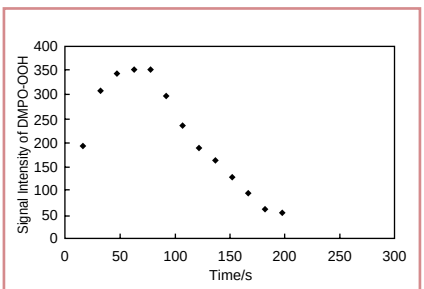
$C_{12}H_{15}NO$=189.25

Stable solid at room temperature contrary to DMPO that is existing as a spin-trapping reagent.
Solubility: Soluble in water (0.65 mol/L) and organic solvents.
CAS : 20894-18-2
mp : 110℃*
*: **Ref.**: Konaka, R. *et al*, Free Rad. Res., **23**, 15(1995)



ESR spectrum of 4PDMPO-OOH and DMPO-OOH in PBS





The data was provided by Dr. Ogata, Graduate School of Engineering, Yamagata Univ.

3. Infrared (IR) Spectroscopy

Liquid Paraffin

[Mineral oil]

121-04745 500mL

129-04741 10×10mL

RT, Liquid

Prepared for IR analysis in accordance with Nujol method.

[8042-47-5]

Density : 0.825-0.850g/mL (20℃)

Flash point : 186℃

TDLo (rat, orl) 92 gm/kg/92D-C

Appearance : Liquid

4. Environment Analysis

A. Endocrine Disrupter Analysis

Estrogen-R (α) Competitor Screening Kit

295-56301 1 kit (2×96tests)

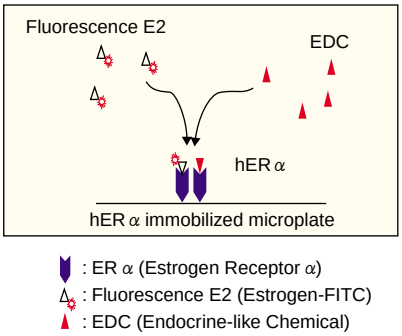
-20℃

This kit consists of human estrogen receptor α (ERα) recombinant coated microplates and the necessary reagents including fluorescein labeled estrogen as the competitor for the assays with a competitive format.

[Features]

1. Fluorescent multi-sample competitive assay format using a 96 well microplate
2. Direct measurement of competition between the target substance and the fluorescein labeled estrogen to the ER α coated on the plate at subpicomole progression
3. A simple assay protocol involving 3 major steps which do not use any immune reactions. This procedure can be completed in 2.5 hours with a standard fluoroplatemeter (Ex 485nm, Em 535nm)
4. A useful tool for primary screening of endocrine disrupting chemicals

Assay principle



B. Standards of potential endocrine disrupting substances (EDSs) at GC-MS analysis

Cat. No.		Package	Appearance	Storage
	[a] Styrene Dimers			
048-26561	1,3-Diphenylpropane Std.	500mg	Liquid	RT
044-26541	2,4-Diphenyl-1-butene Std.	10mg	Liquid	-20℃
040-26521	*cis* -1,2-Dipehnylcyclobutane Std.	10mg	Solid	-20℃
047-26531	*trans* -1,2-Diphenylcyclobutane Std.	10mg	Liquid	-20℃
	[b] Styrene Trimers			
168-19281	1α-Phenyl-4α-(1'-Phenylethyl)-1,2,3,4-tetrahydronaphthalene Std.	10mg	Solid	-20℃
161-19271	1α-Phenyl-4e-(1'-Phenylethyl)-1,2,3,4-tetrahydronaphthalene Std.	10mg	Solid	-20℃
165-19291	1e-Phenyl-4α-(1'-Phenylethyl)-1,2,3,4-tetrahydronaphthalene Std.	10mg	Solid	-20℃
168-19301	1e-Phenyl-4e-(1'-Phenylethyl)-1,2,3,4-tetrahydronaphthalene Std.	10mg	Solid	-20℃
203-14381	1,3,5-Triphenylcyclohexane Std.	10mg	Solid	-20℃
206-14371	2,4,6-Triphenyl-1-hexene Std.	10mg	Liquid	-20℃
	[c] Phthalic Acid Esters			
046-26621	Dicyclohexyl Phthalate Std.	1g	Solid	RT
048-26701	Di-*n* -hexyl Phthalate Std.	1g	Liquid	RT
047-26651	Di-*n* -pentyl Phthalate Std.	1g	Liquid	RT
045-26571	Di-*n* -propyl Phthalate Std.	1g	Liquid	RT
	[d] Alkylphenols			
028-13531	*p-t*- Butylphenol Std.	500mg	Solid	RT
164-19381	*p-n*- Pentylphenol Std.	500mg	Liquid	RT
089-07511	*p-n*- Hexylphenol Std.	500mg	Liquid/Solid	RT
082-07501	*p-n*- Heptylphenol Std.	500mg	Liquid/Solid	RT
146-06791	*p-n*- Nonylphenol Std.	500mg	Solid	RT
159-02061	*p-n*- Octylphenol Std.	500mg	Solid	RT
208-14451	*p*- (1,1,3,3-Tetramethylbutyl)phenol(p-t-Octylphenol) Std.	500mg	Solid	RT
	[e] Others			
026-13571	Benzophenone Std.	500mg	Solid	RT
025-13541	Bisphenol A Std.	500mg	Solid	RT
029-13561	*n*- Buthylbenzene Std.	500mg	Liquid	RT
049-26611	2,4-Dichlorophenol Std.	500mg	Solid	RT
152-02051	Octachlorostyrene Std.	500mg	Solid	-20℃
146-06811	*p*- Nitrotoluene Std.	500mg	Solid	RT

C. Microcystins

Microcystins, a group of cyclic hepapeptide hepatotoxins, is the most commonly reported toxin produced by the bloom-forming cyanobacteria and a primary cause of the cyanobacterial poisoning.

It was reported that Microcystin LR has a tumor promoting activity in rats as well as inhibiting ability to protein phosphatase 1 and 2A.

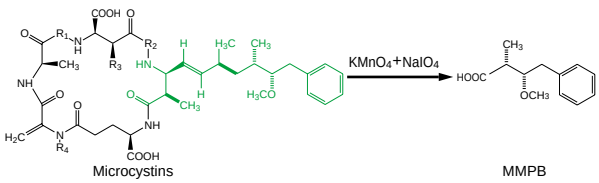
Such actual and potential hazards of Microcystins emphasized the need for monitoring methods of this toxin in various water supplies.

Oxidation Product of Microcystin Std.

MMPB Sodium Salt Standard, 90.0+% (HPLC) [erythro-2-Methyl-3-methoxy-4-phenylbutyric Acid Sodium Salt Standard]

133-12871 1mg

-20℃, Solid



Mixtures of 2R, 3S - and 3R, 2S - isomers

For determination of total microcystin, MMPB, which is the carboxylic acid derivative of Microcystin, is formed from the Adda moiety and is analyzed by GC or HPLC.

MW : 230.24 ($C_{12}H_{15}NaO_3$)

Appearance : Powder

[Related Products]

Microcystin RR

(133-12251, 250μg, -20℃, Solid)

Arg-Arg (RR) analog of Microcystin-LR that is less toxic. Inhibitor of protein phosphatase 2A (IC_{50}=1.4μmol/L).

MW : 1038.21 ($C_{49}H_{75}N_{13}O_{12}$)

CAS : 111755-37-4
Appearance : crystals-crystalline powder

Microcystin YR
(132-12841, 100μg, –20℃, Solid)
Tyr-Arg analog of Microcystin-LR with similar toxicity.
CAS : 101064-48-6
Appearance : Crystals-powder
Toxicity : Highly toxic

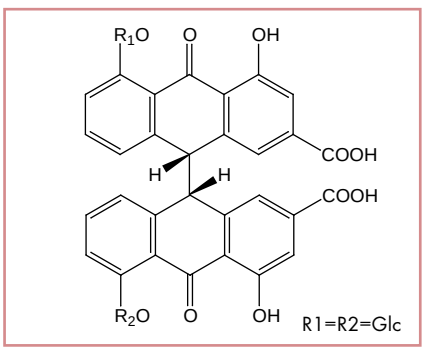
Microcystin LR
(136-12241, 250μg, –20℃, Solid)
A potent inhibitor of both protein phosphatase 1 (PP1) and 2A (PP2A).
Source : Microcystin aeruginosa
MW : 995.19 ($C_{49}H_{74}N_{10}O_{12}$)
CAS : 101043-37-2
Toxicity : Highly toxic; LD_{50} (rat, intraperitoneal) 50μg/kg
Appearance : Crystals - powder

Microcystin ELISA Kit
(300-05191, 1 kit, 2-10℃)
A novel monoclonal antibody against Microcystin LR, produced by Nagata, *et al.*, showed high affinity to microcystin and good crossreactivity to various microcystin derivatives.
Assay range : 0.05-1.6 ng/mL
Manufactured by Tokiwa Chemical Industries, Ltd. (Japan)

5. Natural Ingredient Standards

Sennoside B Standard, 99.0+% (HPLC)

199-11811 10mg
RT, Solid

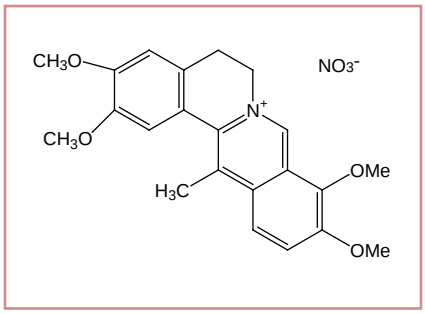


Source : *Cassia angustifolia Vahl, Cassia acutifolia Delile*
MW : 862.74 ($C_{42}H_{38}O_{20}$)
CAS : 128-57-4
Appearance : Crystalline powder-powder
Assay: 99.0%+ (HPLC)

[Related Products]
Sennoside A, 90.0+%(HPLC)
(192-10201, 100mg, Solid)
Sennoside A Std.
(190-08531, 10mg, Solid)
Sennoside B, 97.0+% (HPLC)
(194-09271, 20mg, Solid)
Sennoside B, 90.0+% (HPLC)
(199-10211, 100mg, Solid)

Dehydrocorydaline Nitrate Standard, 99.0+% (HPLC)

043-27611 10mg
2–10℃, Solid
Source : *Corydalis yanhusuo*
MW : 428.44 ($C_{22}H_{24}N_2O_7$)
Solubility : Soluble in water
Appearance : Crystals-powder



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