Wako Product Update

ANALYTICAL CHEMISTRY

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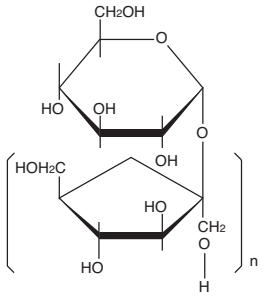
Wako

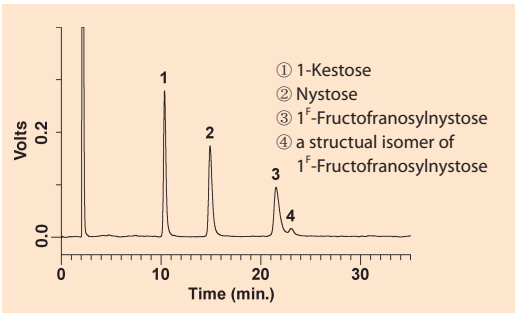
A. Fructooligosaccharide Analysis

This set consists of 500mg vial each of 1-Kestose, Nystose and 1^F-Fructofuranosylnystose.
It is applicable to analyze the fructooligosaccharide components contained in foods and beverages.



n=2 1-Kestose (Glu-Fru_2)
n=3 Nystose (Glu-Fru_3)
n=4 1^F-Fructofuranosylnystose (Glu-Fru_4)

Simultaneous analysis of the Mixture of three fructooligosaccharides



[HPLC conditions]
Column: Wakopak® WS $5NH_2$, 4.6 × 250 mm
Eluent: CH_3CN/H_2O = 70/30 (v/v)
Flow rate: 1.5 mL/min. at 40˚C
Detection: RI
Injection: 10 mg each/mL, 10 μL

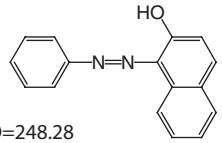
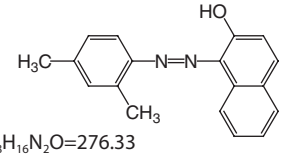
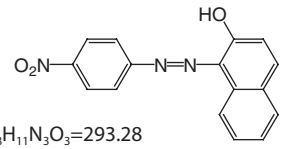
Wako Cat. No. (Pkg. Size)	Description	Specification
298-64101 (1 set)	**Fructooligosaccharides Set** for HPLC Analysis Kit Contents: ① 1-Kestose, 99.0+% (HPLC) ..... 1 vial × 500 mg ② Nystose, 99.0+% (HPLC) ..... 1 vial × 500 mg ③ 1^F-Fructofranosylnystose, 80.0+% (HPLC) ..... 1 vial × 500 mg	① 1-Kestose Specific rotation $[\alpha]_D^{20}$(c=5, H_2O): +28.5 ~ +29.5˚ Water ≦ 5.0% ② Nystose Specific rotation $[\alpha]_D^{20}$(c=5, H_2O): +10.0 ~ +11.5˚ Water ≦ 5.0% ③ 1^F-Fructofranosylnystose Specific rotation $[\alpha]_D^{20}$(c=5, H_2O): -2.5 ~ -1.5˚ Water ≦ 5.0%

Related Products

Wako Cat. No. (Pkg. Size)	Description	Specification
116-00431 (250 mg) 112-00433 (1 g)	1-Kestose, 99.0+% (HPLC) **CAS No.:** 470-69-9 **Solubility:** Soluble in water. Practically insoluble in ethanol and acetone.	Solubility in water: to pass test Specific rotation $[\alpha]_D^{20}$ (c=5, H_2O): +28 ~ +32˚ Water ≦ 0.5% TLC test : to pass test
147-05981 (250 mg) 143-05983 (1 g)	Nystose Trihydrate **CAS No.:** 139523-49-2 **Solubility:** Soluble in water and ethanol. Practically insoluble in acetone.	Solubility in water: to pass test Specific rotation $[\alpha]_D^{20}$ (c=5, H_2O): +9.2 ~ +10.2˚ Water ≦ 0.5% TLC test : to pass test

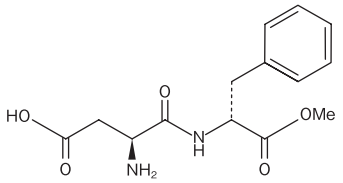
B. Azo Dye Analysis

Sudan I, II, and Para Red, oil-soluble synthetic dyes (azo dyes), are unauthorized food additives in Japan, Europe, and the United States.

Wako Cat. No. (Pkg. Size)	Description		Grade
193-14131 (200 mg)	**Sudan I Standard**, 98.0+% (HPLC) **Chemical Name :** 1-Phenylazo-2-naphtol **CAS No.:** 842-07-9 **Solubility:** Practically insoluble in water. Readily soluble in ethanol, acetone, benzene.	 $C_{16}H_{12}N_2O$=248.28	for HPLC Analysis
190-14141 (200 mg)	**Sudan II Standard**, 98.0+% (HPLC) **Chemical Name :** 1-(2,4-Dimethylphenylazo)-2-naphthol **CAS No.:** 3118-97-6 **Solubility:** Practically insoluble in water. Readily soluble in ethanol, acetone, chloroform.	 $C_{18}H_{16}N_2O$=276.33	
160-22171 (200 mg)	**Para Red Standard**, 98.0+% (HPLC) **Chemical Name:** 1-(4-Nitrophenylazo)-2-naphthol **CAS No.:** 6410-10-2	 $C_{18}H_{11}N_3O_3$=293.28	

C. Aspartame Analysis

LD-Aspartame is used as the reference material for the analysis of "other enantiomer", which is one of the test items of "Aspartame [LL-Aspartame] analysis" in Japanese Standard of Food Additives. Since the LD-Aspartame does not have sweatness, the limit of LD-aspartame is specified.



$C_{14}H_{18}N_2O_5$=294.30
L-α-Aspartyl-D-Phenylalanine Methyl Ester

Description	Wako Cat. No.	Pkg. Size	Solubility
L-α-Aspartyl-D-Phenylalanine Methyl Ester, 95.0+% (HPLC) [LD-Aspartame]	010-20401	200 mg	Soluble in water
	016-20403	1 g	

D. Mycotoxin Analysis

Patulin is a mycotoxin, produced by certain species of *Penicillium* and *Aspergillus*. Apple juice is well-known to be the major source of contamination, and according to official specifications, the advisory limit of patulin in apple juice and the concentrates is less than 50ppb.
This product is for a standard for analyzing the patulin contained in apple juice and the concentrates.

Description	Wako Cat. No.	Pkg. Size	Assay(HPLC)	Grade	CAS No.	Chemical Formula (MW)
Patulin, from Penicillium expansum	168-21631	10 mg	98.5+%	for Mycotoxin Assay	**149-29-1**	$C_7H_6O_4$ (154.12)

Related Products

Description	Wako Cat. No.	Pkg. Size	Assay	Grade	CAS No.	Chemical Formula (MW)
Butenolide	024-07761	10 mg	98.0+% (HPLC)	for Mycotoxin Assay	**16275-44-8**	$C_6H_7NO_3$ (141.13)
Citrinin Standard	033-08011	10 mg	1 spot (TLC)	-	**518-75-2**	$C_{13}H_{14}O_5$ (250.25)
Deoxynivalenol Standard	048-18631	10 mg	98.0+% (HPLC)	for Mycotoxin Assay	**51481-10-8**	$C_{15}H_{20}O_6$ (296.13)
Diacetoxyscirpenol	046-20401	1 mg	98.0+% (HPLC)	for Mycotoxin Assay	**2270-40-8**	$C_{19}H_{26}O_7$ (366.41)
Fumonisin B1	060-03563	10 mg	90.0+% (HPLC)	for Biochemistry	**116355-83-0**	$C_{34}H_{59}NO_{15}$ (721.84)
Neosolaniol Standard	141-04661	10 mg	97.0+% (GC)	for Mycotoxin Assay	**36419-25-2**	$C_{19}H_{26}O_8$ (382.41)
Nivalenol Standard	144-04651	10 mg	97.0+% (GC)	for Mycotoxin Assay	**23282-20-4**	$C_{15}H_{20}O_7$ (312.32)
Ochratoxin A	150-02111	5 mg	97.0+% (HPLC)	for Biochemistry	**303-47-9**	$C_{20}H_{18}ClNO_6$ (403-81)
T-2 Toxin Standard	209-08251	10 mg	97.0+% (GC)	for Mycotoxin Assay	**21259-20-1**	$C_{24}H_{34}O_9$ (466.53)

E. Agricultural Chemical Residues in Foods Listed in the Japanese Positive List System

In accordance with the Law to Partially Revise the Food Sanitation Law, etc. (Law No. 55, 2003), standards regarding residual pesticides in foods, veterinary drugs, and food additives have been established. As a result, the Japanese positive list system that regulates the circulation of foods that contain pesticides whose levels exceed the advisory limits has become effective as of May 29, 2006.
We strive to commercialize standard products that meet the requirements of this positive list system.

Simultaneous Analysis

In anticipation of the enforcement of the positive list system, a notification of simultaneous test was transmitted by the Ministry of Health, Labor, and Welfare in November 2005 (Syoku-an No. 1129002). Each is a pesticide mixture that can be used for the simultaneous test.

* "No." refers to the number designated to the each of the components listed in the "Provisional Maximum Residue Limits for Agricultural Chemicals in Foods (final draft)".

**: Component not listed in the final draft but the residual limit is regulated.

Description	Wako Cat. #	Pkg. Size	Components
Pesticide Mixture PL-1-1 (20µg/mL each in acetone)	169-22261	5 Ampules × 1 mL	32 pesticides

Components	No.(*)	Components	No.	Components	No.
azinphosmethyl	32	spiroxamine	300	fenpropimorph	524
atrazine	39	thiobencarb	355	flucythrinate	554
beta-endosulfan	112	tefluthrin	375	fluvalinate	561
oxadiazon	118	terbutryn	381	procymidone	576
omethoate	132	terbufos	382	trans-permethrin	619
kresoxim-methyl	166	trifluralin	403	cis-permethrin	619
chlorpyriphos-methyl	194	norflurazon	440	penconazol	620
chlorfenapyr	195	bifenthrin	473	pendimethalin	631
cyfluthrin	272	pyrethrins	497	malathion	652
diflufenican	274	fenamiphos	504	methidathion	674
dimethoate	290	fenarimol	505		

Description	Wako Cat. #	Pkg. Size	Components
Pesticide Mixture PL-5-1 (20µg/mL each in acetone)	163-22301	5 Ampules × 1 mL	37 pesticides

Components	No.(*)	Components	No.	Components	No.
EPN	03**	mepronil	59**	tribuphos	399
isoprocarb	04**	cadusafos	1**	pyraflufen-ethyl	484
esprocarb	08**	acrinathrin	22	pyrimethanil	495
diclocymet	21**	acetochlor	36	fenothiocarb	510
(Z)-Dimethylvinphos	25**	isoxathion	66	fluthiacet-methyl	557
simetryn	26**	iprobenfos	75	flumiclorac pentyl	568
thenylchlor	31**	imibenconazole debenzyl form	87	propachlor	581
tricyclazole	34**	etofenprox	100	prometryn	598
bifenox	40**	chlorpropham	200	bromophos	603
(E)-Pyrifenox	43**	dimethametryn	286	benalaxyl	614
fensulfothion	48**	zoxamide	341	phosalone	635
prothiofos	54**	terbacil	342		
benfuresate	57**	tetraconazole	368		

Description	Wako Cat. #	Pkg. Size	Components
Pesticide Mixture PL-6-1 (20µg/mL each in acetone)	160-22311	5 Ampules × 1 mL	37 pesticides

Components	No.(*)	Components	No.	Components	No.
alpha-BHC	01	Quinoclamine	157	phenothrin	511
edifenphos	11	Cyanazine	221	Butamifos	530
Cafenstrole	16	Cyanophos	223	flamprop-methyl	541
Cyhalofop-butyl	24	Dichlofenthion	238	Flumioxazin	567
thifluzamide	29	Diclofop methyl	243	Propazine	582
tolfenpyrad	36	Diphenamid	265	Bromacil	595
(Z)-Pyrifenox	43	Tebufenpyrad	373	Bromobutide	601
pyributicarb	44	Trifloxystrobin	404	Hexaconazole	608

Components	No.(*)	Components	No.	Components	No.
Fenoxanil	47	Napropamide	421	benoxacol	615
prohydrojasmon	55	nitrothal-isopropyl	432	Benfluralin	633
XMC	20	Paclobutrazo	446	mefenoxam	672
oxadixyl	119	Piperophos	476		
quinalphos	155	Pyrazophos	482		

Description	Wako Cat. #	Pkg. Size	Components
Pesticide Mixture PL-7-1 (20µg/mL each in acetone)	167-22321	5 Ampules × 1 mL	30 pesticides

Components	No.(*)	Components	No.	Components	No.
Azamethiphos	27	Chromafenozide	183	Pyrazolynate	483
Azinphos-Methyl	32	Chloridazon	186	Pyriftalid	490
Anilofos	41	Cyazofamid	220	Fenoxycarb	508
Abamectin B1a	42	Cyflufenamid	273	Ferimzone (E)	513
Isoxaflutole	67	Simeconazole	285	Ferimzone (Z)	513
Iprovalicarb	74	Dimethirimol	288	Butafenacil	529
Indoxacarb	88	Thiacloprid	347	Furathiocarb	539
Oryzalin	134	Thiabendazole	350	Benzofenap	628
Cloquintocet-Mexyl	170	Thiamethoxam	352	Milbemectin A3	657
Clothianidin	176	Naproanilide	420	Methoxyfenozide	679

Description	Wako Cat. #	Pkg. Size	Components
Pesticide Mixture PL-8-1 (20µg/mL each in acetone)	164-22331	5 Ampules × 1 mL	21 pesticides

Components	No.(*)	Components	No.	Components	No.
1-Naphthaleneacetic Acid	3	Diclosulam	237	Flumetsulam	570
4-CPA	11	Dichlorprop	245	Fluroxypyr	573
MCPB	16	Gibberellin	281	Bromoxynil	599
Ioxynil	21	Thidiazuron	357	Florasuram	605
Acifluorfen	28	Thifensulfuron-Methyl	359	Fomesafen	642
Cloprop	181	Triclopyr	393	Forchlorfenuron	646
Cloransulam-Methyl	185	Haloxyfop	456	Mecoprop	661

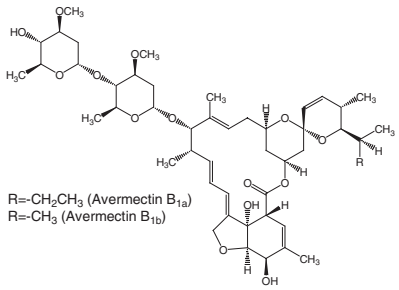
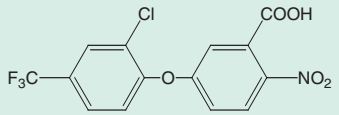
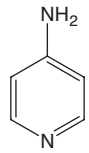
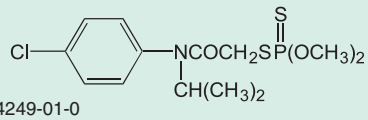
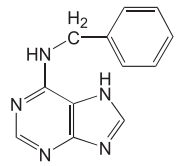
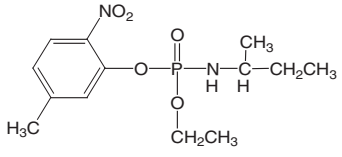
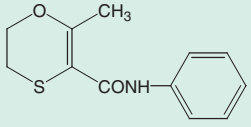
Description	Wako Cat. #	Pkg. Size	Components
Pesticide Mixture PL-9-1 (20µg/mL each in acetone)	161-22341	5 Ampules × 1 mL	18 pesticides

Components	No.(*)	Components	No.	Components	No.
EPTC	14	Chloroneb	208	Fenoxaprop-ethyl	507
Iprodione	73	Diphenylamine	267	Phenobucarb	512
Iprodione metabolite	73	Bioresmethrin	462	Esfenvalerate	519
Imazalil	82	Piperonyl Butoxide	475	Flusilazole	555
Etridiazole	103	Pirimicarb	492	Prochloraz	575
Endosulfan sulfate	112	Famphur	501	Propetamphos	591

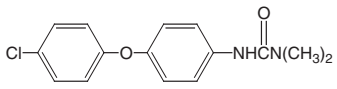
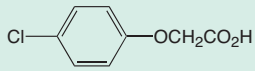
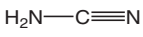
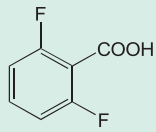
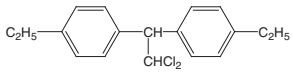
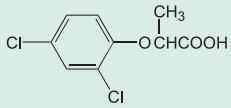
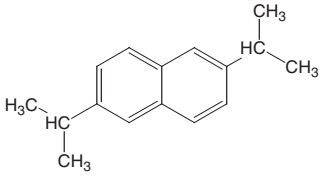
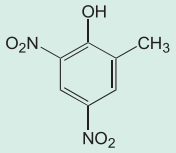
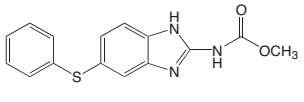
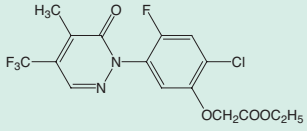
Description	Wako Cat. #	Pkg. Size	Components
Pesticide Mixture PL-10-1 (20µg/mL each in acetone)	168-22351	5 Ampules × 1 mL	9 pesticides

Components	No.(*)	Components	No.	Components	No.
Acephate	37	aldoxycarb	55	Bendiocarb	629
Azoxystrobin	38	Carbaryl	144	Metalaxyl	672
Aldicarb	54	Thiabendazole	350	Metribuzin	585

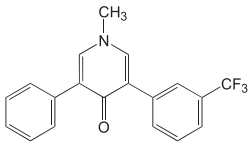
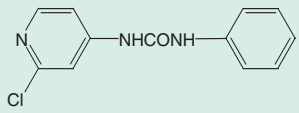
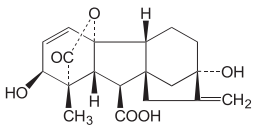
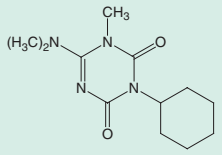
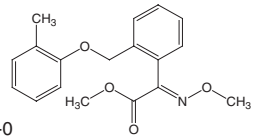
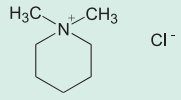
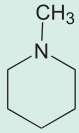
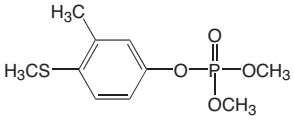
F. Standards for Pesticide Residue Analysis

Wako Cat. No. (Package Size)	Description	Chemical Structure/Chemical Formula/CAS No.
016-20361 (200mg)	**Abamectin Standard**, 95.0+% (HPLC) <insecticide> Mixture of Avermectin B_{1a} and B_{1b} **Chemical Name:** **B1a:** (10E, 14E, 16E, 22Z)-(1R, 4S, 5'S, 6S, 6'R, 8R, 12S, 13S, 20R, 21R, 24S)-6'-[(S)-sec-Butyl]-21, 24-dihydroxy-5', 11, 13, 22-tetramethyl-2-oxo-3, 7, 19-trioxatetracyclo[15.6.1.14, 8.020, 24]pentacosa-10, 14, 16, 22-tetraene-6-spiro-2'-(5', 6'-dihydro-2'H-pyran)-12-yl 2, 6-Dideoxy-4-O-(2, 6-dideoxy-3-O-methyl-*α*-L-arabino-hexopyranosyl)-3-O-methyl-*α*-L-arabino-hexopyranoside **B1b:** (10E, 14E, 16E, 22Z)-(1R, 4S, 5'S, 6S, 6'R, 8R, 12S, 13S, 20R, 21R, 24S)-21, 24-dihydroxy-6'-isopropyl-5', 11, 13, 22-tetramethyl-2-oxo-3, 7, 19-trioxatetracyclo[15.6.1.14, 8.020, 24]pentacosa-10, 14, 16, 22-tetraene-6-spiro-2'-(5', 6'-dihydro-2'H-pyran)-12-yl 2, 6-Dideoxy-4-O-(2, 6-dideoxy-3-O-methyl-*α*-L-arabino-hexopyranosyl)-3-O-methyl-α-L-arabino-hexopyranoside **Another Name:** Agrimec **Solubility:** In water 7-10*μ*g/L (20°C). In toluene 350, acetone 100, isopropanol 70, chloroorm 25, ethanol 20, methanol 19.5, n-butanol 10, cyclohexane 6 (all in g/L, 21°C)	 R=-CH_2CH_3 (Avermectin B_{1a}) R=-CH_3 (Avermectin B_{1b}) CAS No. 71751-41-2 B1a:$C_{48}H_{72}O_{14}$ = 873.08 B1b:$C_{47}H_{70}O_{14}$ = 859.05
010-20521 (200mg)	**Acifluorfen Standard**, 98.0+% (cGC) <herbicide> **Chemical Name:** 5-(2-5-(2-Chloro-*α*,*α*,*α*-trifluoro-p-tolyloxy)-2-nitrobenzoic Acid **Solubility:** In water 120mg/L (23-25°C). In acetone 600, ethanol 500, dichloromethan 50, xylene, kerosene <10 (all in g/kg, 25°C)	 CAS No. 50594-66-6 $C_{14}H_7ClF_3NO_5$ = 361.66
015-20451 (200mg)	**4-Aminopyridine Standard**, 99.0+% (cGC) <repellent> **Another Name:** Avitrol-200 **Solubility:** Freely soluble in water, ethanol and acetone.	 CAS No. 504-24-5 $C_5H_6N_2$ = 94.11
016-20241 (200mg)	**Anilofos Standard**, 98.0+% (HPLC) <herbicide> **Chemical Name:** *S*-4-Chloro-*N*-isopropylcarbaniloylmethyl *O*,*O*-DimethylPhosphorodithioate **Another Name:** Arozin **Solubility:** In water 13.6mg/L (20°C)In acetone, chloroform, toluene > 1,000, benzene, ethanol, dichloromethane, ethyl acetate >200, hexane 12 (all in g/L)	 CAS No. 64249-01-0 $C_{13}H_{19}ClNO_3PS_2$ = 367.85
022-15251 (200mg)	**6-Benzylaminopurine Standared**, 99.0+% (cGC) <plant growth regulator> **Chemical Name:** 6-Benzyladenine **Another Name:** BA **Solubility:** Insoluble in general organic solvents. Soluble in dimethylformamide and dimethyl sulfoxide.	 CAS No. 1214-39-7 $C_{12}H_{11}N5$ = 225.25
020-15431 (200mg)	**Bromochloromethane Standard**, 98.0+% (cGC) <fumigation>	CAS No. 74-97-5 $BrCH_2Cl$ = 129.38 Br—CH_2—Cl
024-15571 (100mg)	**Butamifos Oxon Standard**, 98.0+% (cGC) **Chemical Name:** *O*-Ethyl *O*-6-Nitro-m-tolyl sec-Butylphosphoramidate	 CAS No. 56362-05-1 $C_{13}H_{21}N_2O_5P$ = 316.29
034-19771 (200mg)	**Carboxin Standard**, 98.0+% (cGC) <bactericide> **Chemical Name:** 5,6-Dihydro-2-methyl-1,4-oxathiine-3-carboxanilide **Solubility:** In water 199mg/L (25°C). In acetone 177, methylene chloride 353, methanol 88, ethyl acetate 93 mg/L (25°C).	 CAS No. 5234-68-4 $C_{12}H_{13}NO_2S$= 235.30

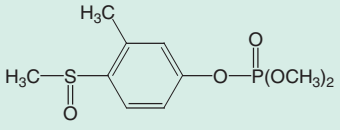
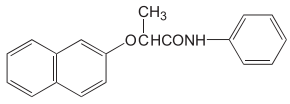
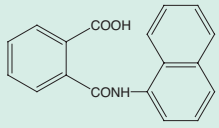
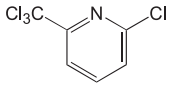
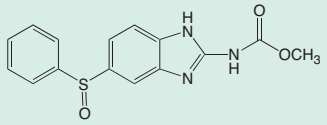
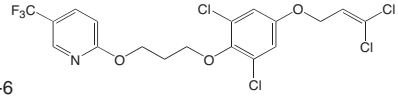
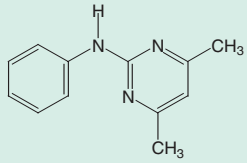
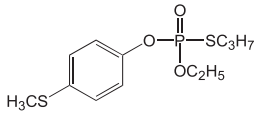
F. Standards for Pesticide Residue Analysis

Wako Cat. No. (Package Size)	Description	Chemical Structure/Chemical Formula/CAS No.
030-19751 (200mg)	**Chloroxuron Standard**, 98.0+% (HPLC) <herbicide> **Chemical Name:** 3-[4-(4-Chlorophenoxy)phenyl]-1,1-dimethylurea **Solubility:** Freely soluble in ethanol and acetone. Practically insoluble in water.	 CAS No. 1982-47-4 $C_{15}H_{15}ClN_2O_2$ = 290.74
030-19511 (200mg)	**4-CPA Standard**, 99.0+% (HPLC) <plant growth regulator> **Chemical Name:** *p*-Chlorophenoxyacetic Acid **Another Name:** Tomatotone **Solubility:** Freely soluble in ethanol. Slightly soluble in water.	 CAS No. 122-88-3 $C_8H_7ClO_3$ = 186.59
032-19711 (200mg)	**Cyanamide Standard**, 95.0+% (Ti) **Solubility:** Freely soluble in water, ethanol and acetone.	 CAS No. 420-04-2 CH_2N_2 = 42.04
045-29371 (200mg)	**2,6-Difluorobenzoic Acid Standard**, 98.0+% (Ti) <miticide> **Solubility:** Soluble in ethanol and acetone. Slightly soluble in water.	CAS No. 385-00-2 $C_7H_4F_2O_2$ = 158.10 
044-29601 (200mg)	**1,1-Dichloro-2,2-bis(4-ethylphenyl)ethane Standard**, 98.0+% (cGC) <Insecticide> **Another Name:** Ethylan	CAS No. 72-56-0 $C_{18}H_{20}Cl_2$ = 307.26 
049-29411 (200mg)	**Dichloroprop Standard**, 99.0+% (HPLC) <plant growth regulator, herbicide> **Chemical Name:** (*RS*)-2-(2,4-Dichlorophenoxy)propionic Acid **Another Name:** Basagran **Solubility:** In water 350 mg/L (20°C). In acetone 595, Isopropanol 510, benzene 85, toluene 69, xylene 51, Kerosene 2.1 (g/L, 20°C)	CAS No. 120-36-5 $C_9H_8Cl_2O_3$ = 235.06 
043-29811 (200mg)	**2,6-Diisopropylnaphthalene Standard**, 98.0+% (cGC) <plant growth regulator>	CAS No. 24157-81-1 $C_{16}H_{20}$ = 212.33 
042-29401 (200mg)	**DNOC Standard**, 98.0+% (cGC) <insecticide> **Chemical Name:** 4,6-Dinitro-o-cresol **Common Name:** Ibertox **Solubility:** In water 6.94 g/L (20°C, pH 7). In toluene 251, methanol 58.4, hexane 4.03, Ethyl Acetate 338, Acetone 514, dichloromethane 503 (all in g/L, 20°C)	CAS No. 534-52-1 $C_7H_6N_2O_5$ = 198.13 
064-04661 (200mg)	**Fenbendazole Standard**, 98.0+% (HPLC) <vermicide> **Chemical Name:** Methyl [5-(Phenylthio)-1*H*-benzimidazol-2-yl]carbamate **Solubility:** Soluble in *N*,*N*-dimethylformamide.	CAS No. 43210-67-9 $C_{15}H_{13}N_3O_2S$= 299.35 
068-04681 (100mg)	**Flufenpyl-ethyl Standard**, 98.0+% (HPLC) <herbicide> **Chemical Name:** Ethyl 2-Chloro-5-[1,6-dihydro-5-methyl-6-oxo- 4-(trifluoromethyl) pyridazin-1-yl]-4-fluorophenoxyacetate **Solubility:** Soluble in acetone. Practically insoluble in water and ethanol.	 CAS No. 188489-07-8 $C_{16}H_{13}ClF_4N_2O_4$ = 408.73

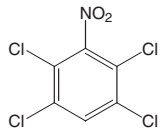
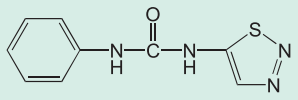
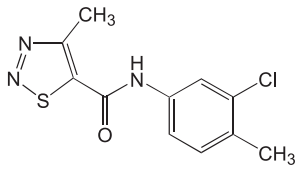
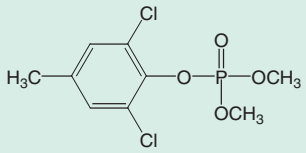
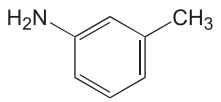
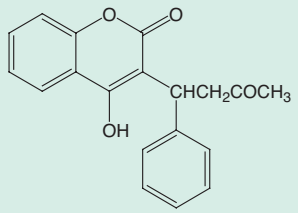
F. Standards for Pesticide Residue Analysis

Wako Cat. No. (Package Size)	Description	Chemical Structure/Chemical Formula/CAS No.
062-04601 (200mg)	**Fluridone Standard**, 98.0+% (HPLC) <herbicide> **Chemical Name:** 1-Methyl-3-phenyl-5-[3-(trifluoromethyl)phenyl]-4(1*H*)-pyridinone **Another Name:** Sonar **Solubility:** In water 12 mg/L (25°C, pH 7). In methanol, chloroform, diethyl ether > 10, ethyl acetate > 5, hexane <0.5 in hexane (all in g/L)	 CAS No. 59756-60-4 $C_{19}H_{14}F_3NO$ = 329.32
066-04621 (200mg)	**Forchlorfenuron Standard**, 99.0+% (HPLC) <plant growth regulator> **Chemical Name:** 1-(2-Chloro-4-pyridyl)-3-phenylurea **Common Name:** Fulmet **Solubility:** In water 39 mg/L (pH 6.4, 21°C).	 CAS No. 68157-60-8 $C_{12}H_{10}ClN_3O$ = 247.68
078-05081 (200mg)	**Gibberelline A_3 Standard**, 95.0+% (HPLC) <plant growth regulator> **Chemical Name:** (3*S*,3a*S*,4*S*,4a*S*,6*S*,8a*R*,8b*R*,11*S*)-6,11-dihydroxy-3-methyl-12-methylene-2-oxo-4a,6-ethano-3,8b-prop-1-eno-perhydroindeno[1,2-*b*]furan-4-carboxylic Acid **Another Name:** Gibberellin Acid **Solubility:** In water 5 g/L (room temperature), Soluble in methanol, ethanol, acetone, alkaline solution. Slightly soluble in ethyl acetate. Insoluble in chloroform.	 CAS No. 77-06-5 $C_{19}H_{22}O_6$ = 346.37
081-08311 (200mg)	**Hexazinone Standard**, 98.0+% (cGC) <herbicide> **Chemical Name:** 3-Cyclohexyl-6-(dimethylamino)-1-methyl-1,3,5-triazine-2,4-(1*H*,3*H*)-dione **Solubility:** In water 33g/kg (25°C). In chloroform 3880, methanol 2650, benzene 940, dimethylformamide 836, acetone 792, toluene 386, hexane 3 (all in g/kg, 25°C)	 CAS No. 51235-04-2 $C_{12}H_{20}N_4O_2$ = 252.31
118-00533 (100mg)	**Kresoxim-methyl Standard**, 99.0+% (cGC) <bactericide> **Chemical Name:** Methyl (*E*)-2-Methoxyimino-2-[2-(*o*-tolyloxymethyl)phenyl]acetate **Solubility:** In water 2.0 × 10^{-4}, acetone 171.0, methanol 11.8, dichlor 1,244.6(mg/mL)	 CAS No. 143390-89-0 $C_{18}H_{19}NO_4$ = 313.35
130-14841 (200mg)	**Mepiquat Chloride Standard**, 98.0+% (Ti) <plant growth regulator> **Chemical Name:** 1,1-Dimethylpiperidinium Chloride **Another Name:** Frastar **Solubility:** In water > 500 g/kg (20°C). In ethanol 162, chloroform 10.5, acetone, benzene, ethyl acetate, cyclohexane < 1.0 (all in g/kg, 20°C)	 CAS No. 24307-26-4 $C_7H_{16}NCl$ = 149.66
139-14791 (200mg)	**Methyl Isothiocyanate Standard**, 99.0+% (cGC) <bactericide, insecticide, herbicide> **Chemical Name:** Methyl Isothiocyanate **Another Name:** Trapex	$CH_3N{=}CS$ CAS No. 556-61-6 C_2H_3NS = 73.12
133-14831 (200mg)	**1-Methylpiperidine Standard**, 99.0+% (cGC) <plant growth regulator, mepiquat chloride metabolite> **Solubility:** Soluble in water, alcohol, ether.	 CAS No. 626-67-5 $C_6H_{13}N$ = 99.17
137-14971 (200mg)	**MPP Oxon Standard**, 98.0+% (cGC) **Chemical Name:** *O*,*O*-Dimethyl *O*-3-Methyl-4-(methylthio)phenyl Phosphate **Another Name:** Fenthion Oxon **Solubility:** Soluble in acetone.	 CAS No. 6552-12-1 $C_{10}H_{15}O_4PS$ = 262.26

F. Standards for Pesticide Residue Analysis

Wako Cat. No. (Package Size)	Description	Chemical Structure/Chemical Formula/CAS No.
136-15161 (100mg)	**MPP Oxon Sulfoxide Standard**, 98.0+% (cGC) **Chemical Name:** *O,O*-Dimethyl *O*-3-Methyl-4-methylsulfinylphenyl Phosphate	 CAS No. 6552-13-2 $C_{10}H_{15}O_5PS$ = 278.26
148-08211 (100mg)	**Naproanilide Standard**, 99.0+% (HPLC) <herbicide> **Chemical Name:** 2-(2-Naphthyloxy)-*N*-phenylpropionamide **Another Name:** Uribest **Solubility:** In water 0.75 mg/L (27°C). In acetone 171, toluene 42, ethanol 17, benzene 46 (all in g/L, 27°C).	 CAS No. 52570-16-8 $C_{19}H_{17}NO_2$ = 291.34
140-08271 (200mg)	**Naptalam Standard**, 98.0+% (HPLC) <herbicide> **Chemical Name:** *N*-1-Naphthylphthalamic Acid **Another Name:** Alanap **Solubility:** In water 200 mg/L (20°C). In acetone 5, dimethylformamide 39, dimethyl sulfoxide 43, methylethyl ketone 4, isopropanol 2, carbon tetrachloride 0.1 (g/kg).	 CAS No. 132-66-1 $C_{18}H_{13}NO_3$ = 291.30
141-08201 (200mg)	**Nitrapyrin Standard**, 98.0+% (GC) <bactericide> **Chemical Name:** 2-Chloro-6-trichloromethylpyridine **Another Name:** N-Serve **Solubility:** In water 72 ppm (25°C). In ethanol 300 g/kg (20°C), acetone 1.98, dichloromethane 1.85, xylene 1.04 (kg/kg, 26°C).	 CAS No. 1929-82-4 $C_6H_3Cl_4N$ = 230.91
155-02541 (200mg)	**Oxfendazole Standard**, 98.0+% (HPLC) <anthelminthic> **Chemical Name:** Methyl [5-(Phenylsulfinyl)-1H-benzimidazol-2-yl]carbamate **Solubility:** Soluble in N,N-dimethylformamide	 CAS No. 53716-50-0 $C_{15}H_{13}N_3O_3S$ = 315.35
163-21941 (00mg)	**Pyridalyl Standard**, 98.0+% (HPLC) <insecticide> **Chemical Name:** 2,6-Dichloro-4-(3,3-dichloroallyloxy)phenyl-3-[5-(trifluoromethyl)-2-pyridyloxy]propyl Ether **Other Name:** Pyridalyl **Solubility:** soluble in acetone. Slightly soluble in water.	 CAS No. 179101-81-6 $C_{18}H_{14}Cl_4F_3NO_3$ = 491.12
168-21751 (200mg)	**Pyrimethanil Standard**, 98.0+% (cGC) <bactericide> **Chemical Name:** *N*-(4,6-Dimethylpyrimidine-2-yl) aniline **Solubility:** In water 0.121g/L (pH 6.1, 25°C). In acetone 389, ethyl acetate 617, methanol 176, methylene chloride 1000, n-hexane 23.7, toluene 412 (all in g/L, 20°C)	 CAS No. 53112-28-0 $C_{12}H_{13}N_3$ = 199.25
193-13651 (100mg)	**Sulprofos Oxon Standard**, 98.0+% (cGC) <plant growth regulator> Standard for sulprofos analysis **Chemical Name:** *O*-Ethyl *O*-Methylthiophenyl-*S*-propylphosphorothioate **Solubility:** Soluble in acetone.	 CAS No. 38527-90-1 $C_{12}H_{19}O_3PS_2$ = 306.38

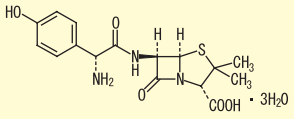
F. Standards for Pesticide Residue Analysis

Wako Cat. No. (Package Size)	Description	Chemical Structure/Chemical Formula/CAS No.
201-16261 (00mg)	**TCA-sodium Standard**, 95.0+% (Ti) <herbicide> **Chemical Name:** Sodium Trichloroacetate (Sodium TCA) **Another Name:** Erbitox **Solubility:** In water 1.2kg/L (25°C). In methanol 232, acetone 7.6, diethylether 0.2, benzene 0.07, carbone tetrachloride 0.04, heptane 0.02 (g/L, 25°C).	Cl_3CCO_2Na CAS No. 650-51-1 $C_2Cl_3NaO_2$ = 185.37
209-16441 (200mg)	**Tecnazene Standard**, 98.0+% (cGC) <bactericide> **Chemical Name:** 1,2,4,5-Tetrachloro-3-nitrobenzene **Solubility:** In water 0.44mg/L (20°C), In ethanol 40 g/L (25°C).	 CAS No. 117-18-0 $C_6HCl_4NO_2$ = 260.89
203-16221 (200mg)	**Thidiazuron Standard**, 98.0+% (HPLC) <plant growth regulator> **Chemical Name:** 1-Phenyl-3-(1,2,3-thiadiazol-5-yl)urea **Common Name:** Dropp **Solubility:** In water 31 mg/L (pH 7, 25°C), hexane 0.002, methanol 4.20, dichloromethane 0.003, toluene 0.400, acetone 6.67, ethyl acetate 1.1 (g/L, 20°C)	 CAS No. 51707-55-2 $C_9H_8N_4OS$ = 220.25
204-16251 (100mg)	**Tiadinil Standard**, 98.0+% (HPLC) <bactericide> **Chemical Name:** 3′-Chloro-4,4′-dimethyl-1,2,3-thiadiazole-5-carboxanilide **Another Name:** VGET **Solubility:** In water 0.0132 g/L (pH 6.13~6.48, 20°C). Hexane 0.0740, toluene 11.8, dichloromethane 156. In acetone 434, methanol 124, ethyl acetate 198 (g/L, 20°C).	 CAS No. 223580-51-6 $C_{11}H_{10}ClN_3OS$ = 267.73
202-16551 (100mg)	**Tolclofos-methyl Oxon Standard**, 98.0+% (cGC) **Chemical Name:** *O*-2,6-Dichloro-p-tolyl *O*,*O*-Dimethyl Phosphate	 CAS No. 97483-08-4 $C_9H_{11}Cl_2O_4P$ = 285.06
200-16231 (100mg)	***m*-Toluidine Standard**, 99.0+% (cGC) **Another Name:** Phenmedipham Metabolite **Solubility:** Soluble in ethanol and acetone. Slightly soluble in water.	 CAS No. 108-44-1 C_7H_9N = 107.15
232-02281 (00mg)	**Warfarin Standard**, 99.0+% (HPLC) <rodenticide> **Chemical Name:** 3-(α-Acetonylbenzyl)-4-hydroxycoumarin **Another Name:** Sakarat **Solubility:** In water 17mg/L (20°C). In acetone 65, chloroform 56, dioxane 100 (g/L, 20°C). Slightly soluble in benzene, ether, cyclohexane. Soluble in methanol, ethanol, isopropanol.	 CAS No. 81-81-2 $C_{19}H_{16}O_4$ = 308.33

G. Standards for Veterinary Drugs Listed in the Japanese Positive List System

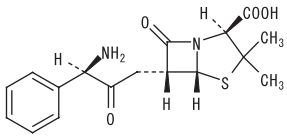
Veterinary Drug Standard for HPLC Analysis

Amoxicillin Trihydrate Standard, 98.0+% (HPLC)



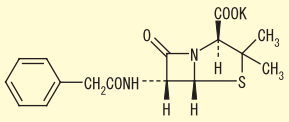
CAS No. 61336-70-7
$C_{16}H_{19}N_3O_5S \cdot 3H_2O$=419.45
Wako Cat. #018-20441 (200 mg)

Ampicillin Standard, 98.0+% (HPLC)



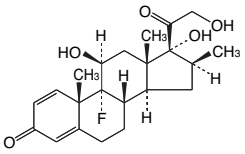
CAS No. 69-53-4
$C_{16}H_{19}N_3O_4S$=349.40
Wako Cat. #017-20531 (200 mg)

Benzylpenicillin Potassium Standard, 98.0+%(HPLC)



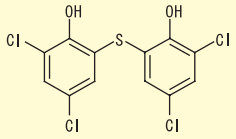
CAS No. 113-98-4
$C_{16}H_{17}KN_2O_4S$=372.48
Wako Cat. #025-15501 (200 mg)

Betamethasone Standard Assay, 98.0+% (HPLC)



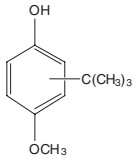
CAS No. 378-44-9
$C_{22}H_{29}FO_5$=392.46
Wako Cat. #026-15271 (200 mg)

Bithionol Standard, 98.0+% (HPLC)



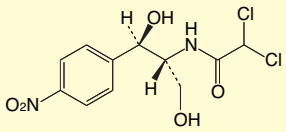
CAS No. 97-18-7
$C_{12}H_6Cl_4O_2S$=356.05
Wako Cat. #028-15351 (200 mg)

Butylhydroxsyanisole Standard (mixture of isomers), 98.0+% (HPLC)



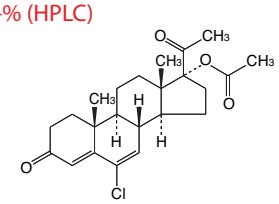
CAS No. 213-16-5
$C_{11}H_{16}O_2$=180.24
Wako Cat. #020-15311 (200 mg)

Chloramphenicol Standard, 98.0+% (HPLC)



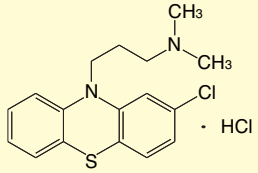
CAS No. 56-75-7
$C_{11}H_{12}Cl_2N_2O_5$=323.13
Wako Cat. #037-19641 (200 mg)

Chlormadinone Acetate Standard, 99.0+% (HPLC)



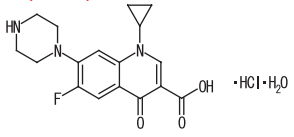
CAS No. 302-22-7
$C_{23}H_{29}ClO_4$=404.93
Wako Cat. #034-19531 (200 mg)

Chlorpromazine Hydrochloride Standard, 98.0+% (HPLC)



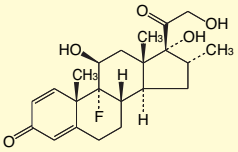
CAS No. 69-09-0
$C_{17}H_{19}ClN_2S \cdot HCl$=355.33
Wako Cat. #036-19611 (200 mg)

Ciprofloxacin Hydrochloride Monohydrate Standard, 98.0+% (HPLC)



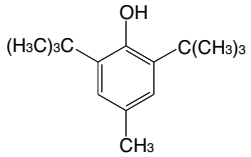
CAS No. 86393-32-0
$C_{17}H_{18}FN_3O_3 \cdot HCl \cdot H_2O$=385.82
Wako Cat. #033-19621 (200 mg)

Dexamethasone Standard, 98.0+% (HPLC)



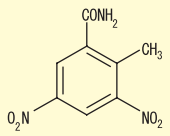
CAS No. 50-02-2
$C_{22}H_{29}FO_5$=392.46
Wako Cat. #045-29491 (200 mg)

Dibutylhydroxytoluene Standard, 98.0+% (HPLC)



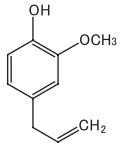
CAS No. 128-37-0
$C_{15}H_{24}O$=220.35
Wako Cat. #047-29451 (200 mg)

Dinitolmide Standard, 98.0+% (HPLC)



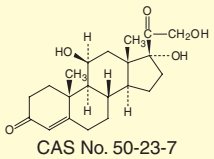
CAS No. 148-01-6
$C_8H_7N_3O_5$=225.16
Wako Cat. #049-29531 (200 mg)

Eugenol Standard, 98.0+% (HPLC)



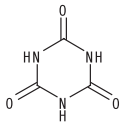
CAS No. 97-53-0
$C_{10}H_{12}O_2$=164.20
Wako Cat. #059-07351 (200 mg)

Hydrocortisone Standard, 98.0+% (HPLC)



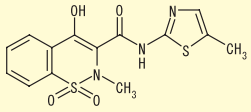
CAS No. 50-23-7
$C_{21}H_{30}O_5$=362.46
Wako Cat. #086-08241 (200 mg)

Isocyanuric Acid Standard, 98.0+% (HPLC)



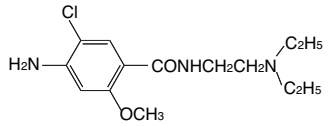
CAS No. 108-80-5
$C_3H_3N_3O_3$=129.07
Wako Cat. #091-05311 (200 mg)

Meloxicam Standard, 98.0+% (HPLC)



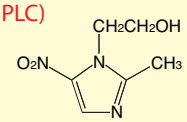
CAS No. 71125-38-7
$C_{14}H_{13}N_3O_4S_2$=351.40
Wako Cat. #135-15131 (200 mg)

Metoclopramide Standard, 98.0+% (HPLC)



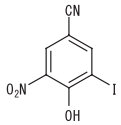
CAS No. 364-62-5
$C_{14}H_{22}ClN_3O_2$=299.80
Wako Cat. #132-14921 (200 mg)

Metronidazole Standard, 98.0+% (HPLC)



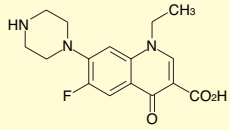
CAS No. 443-48-1
$C_6H_9N_3O_3$=171.15
Wako Cat. #139-14931 (200 mg)

Nitroxynil Standard, 98.0+% (HPLC)



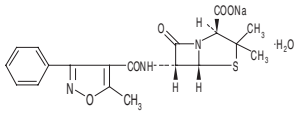
CAS No. 1689-89-0
$C_7H_3IN_2O_3$=290.01
Wako Cat. #142-08231 (200 mg)

Norfloxacin Standard, 98.0+% (HPLC)



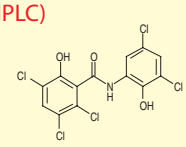
CAS No. 70458-96-7
$C_{16}H_{18}FN_3O_3$=319.33
Wako Cat. #149-08241 (200 mg)

Oxacillin Sodium Monohydrate Standard, 98.0+% (HPLC)



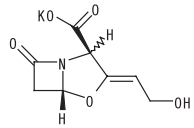
CAS No. 7240-38-2
$C_{19}H_{18}N_3NaO_5S \cdot H_2O$=441.43
Wako Cat. #158-02531 (200 mg)

Oxyclozanide Standard, 98.0+% (HPLC)



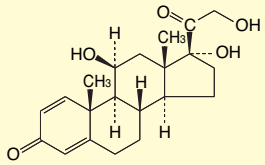
CAS No. 2277-92-1
$C_{13}H_6Cl_5NO_3$=401.46
Wako Cat. #159-02561 (200 mg)

Potassium Clavulanate Standard, 98.0+% (HPLC)



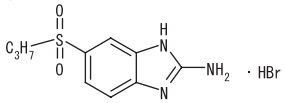
CAS No. 61177-45-5
$C_8H_8KNO_5$=237.25
Wako Cat. #166-21791 (100 mg)

Prednisolone Standard, 98.0+% (HPLC)



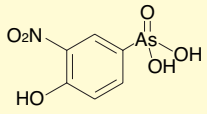
CAS No. 50-24-8
$C_{21}H_{28}O_5$=360.44
Wako Cat. #162-21911 (200 mg)

5-Propylsulfonyl-1H-benzimidazole-2-amine Hydrobromide Standard, 98.0+% (HPLC)
[Synonym: Albendazole Metabolite]



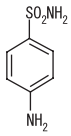
CAS No. 80983-34-2
$C_{10}H_{13}N_3O_2S \cdot HBr$=320.21
Wako Cat. #164-22211 (100 mg)

Roxarson Standard, 98.0+% (HPLC)



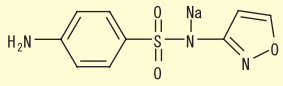
CAS No. 121-19-7
$C_6H_6AsNO_6$=263.04
Wako Cat. #181-01941 (200 mg)

Sulfanilamide Standard, 98.0+% (HPLC)



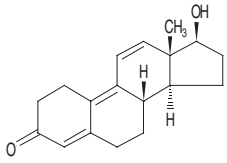
CAS No. 63-74-1
$C_6H_8N_2O_2S$=172.20
Wako Cat. #198-14061 (200 mg)

Sulfisozole Sodium Standard, 98.0+% (HPLC)



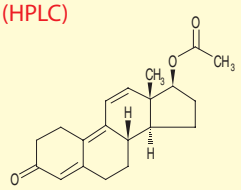
CAS No. 73247-57-1
$C_9H_8N_3NaO_3S$=261.23
Wako Cat. #195-14071 (200 mg)

β-Trenbolone Standard, 98.0+% (HPLC)



CAS No. 10161-33-8
$C_{18}H_{22}O_2$=270.37
Wako Cat. #205-16281 (200 mg)

Trenbolone Acetate Standard, 98.0+% (HPLC)



CAS No. 10161-34-9
$C_{20}H_{24}O_3$=312.40
Wako Cat. #208-16271 (200 mg)

A. LC/MS Solvents

Ultrapure water now available!

Liquid chromatography - mass spectrometry (LC/MS) is widely used in various fields including biological, food, and environmental analyses. In particular, recent breakthroughs in the development and upgrades of device interfaces have led to the use of LC/MS in microanalyses of environmental pollutants and chemical metabolites, etc.
In addition to LC/MS solvents already available, we now offer ultrapure water. This water guarantees a total organic carbon (TOC) level of 4ppb or less, and is an ideal LC/MS reagent to analyze trace components.

Description	Wako Cat. No.	Package Size	Features	Specification
Ultrapure Water	214-01301	1 L	· Decreased total organic carbon levels · Guarantees the absorbance and fluorescence tests · Use of specially processed glass containers / aluminum caps	Density (20˚C): 0.997 ~ 0.999 g/mL Refractive index nD20: 1.332 ~ 1.334 Absorbance (210~400nm): max. 0.01 Fluorescence test: to pass test Total organic carbon (TOC): max. 4 ppb
	210-01303	3 L		
Acetonitrile	016-19852	100 mL	· Suitability test for LC/MS analysis performed · Guarantees noise level at m/z 50~2,000 · Use of aluminum caps Reduced risks of slight amounts of contaminants from plastic caps	Assay (cGC): 99.8+% Density (20˚C): 0.780 ~ 0.783 g/mL Fluorescence test: to pass test Suitability for LC/MS analysis: to pass test
	012-19851	1 L		
	018-19853	3 L		
Methanol	132-14524	100 mL		Assay (cGC): 99.7+% Density (20˚C): 0.789~0.792 g/mL Fluorescence test: to pass test Suitability for LC/MS analysis: to pass test
	138-14521	1 L		
	134-14523	3 L		
Acetic Acid	018-20061	50 mL	· Suitability test for LC/MS analysis performed · Reduced background noise	Assay (HPLC): 99.5+% Absorbance (1 → 4, 250nm): max. 0.50 Absorbance (1 → 4, 254nm): max. 0.10 Fluorescence test: to pass test Suitability for LC/MS analysis: to pass test
Formic Acid (abt. 99%)	067-04531	50 mL		Assay (HPLC): 99.5+% Solubility in water: to pass test Absorbance (1 → 4, 254nm): max.1.00 Fluorescence test: to pass test Suitability for LC/MS analysis: to pass test

Related Products

Description	Wako Cat. No.	Package Size	Features	Joint Type
Wakopak® MS-5C18GT	001-00030	2.0mmϕ × 50mm 2.0mmϕ × 100mm 2.0mmϕ × 150mm	· The glass lined inside wall of the stainless column allows maximum inactivation · Excellent peak shapes and recovery rates in analyses of trace components within biological samples	DuPont

B. HPLC Solvents

Ready-to-Use Acid Solution in Acetonitrile for HPLC analysis

Acetonitrile to which acid is added is commonly used as a solvent in HPLC analyses. In particular, the widespread use of LC/MS has led to an increase in the number of cases that use acetic acid and formic acid. These products consist of acetonitrile for LC/MS to which high-purity acid has been added, respectively. These solutions meet the specifications for UV and fluorescent substance and are thus ideal as solvents for HPLC analyses.

Description	Wako Cat. No. (Pkg. Size)	Specifications	Grade
0.1 vol% Acetic Acid-Acetonitrile	011-20551 (1 L); 017-20553 (3 L)	· Fluorescence test : to pass test · Suitability for LC/MS analysis : to pass test	for LC/MS
0.1 vol% Formic Acid-Acetonitrile	062-04721 (1 L); 068-04723 (3 L)		
0.1 vol% Trifluoroacetic Acid-Acetonitile	206-16451 (1 L); 202-16453 (3 L)	· Absorbance (240 nm) : max. 0.30 · Absorbance (270~400 nm) : max. 0.01 · Fluorescence test : to pass test	for HPLC

Related Products

Description	Wako Cat. No.	Pkg. Size	Content (volume ratio)	Specifications	Grade
Acetonitrile Solution (1+9)	010-19911	50 mL	$CH_3CN : H_2O = 1 : 9$	· Absorbance (200 nm) : max. 0.05 · Absorbance (225~400 nm) : max. 0.01 · Fluorescence test : to pass test	for HPLC
Acetonitrile Solution (2+8)	017-19921	50 mL	$CH_3CN : H_2O = 2 : 8$		
Acetonitrile Solution (3+7)	014-19931	50 mL	$CH_3CN : H_2O = 3 : 7$		
Acetonitrile Solution (4+6)	011-19941	50 mL	$CH_3CN : H_2O = 4 : 6$		
Acetonitrile Solution (5+5)	018-19951	50 mL	$CH_3CN : H_2O = 5 : 5$		
Acetonitrile Solution (6+4)	015-19961	50 mL	$CH_3CN : H_2O = 6 : 4$		
Acetonitrile Solution (7+3)	012-19971	50 mL	$CH_3CN : H_2O = 7 : 3$		
Acetonitrile Solution (8+2)	019-19981	50 mL	$CH_3CN : H_2O = 8 : 2$		
Acetonitrile Solution (9+1)	016-19991	50 mL	$CH_3CN : H_2O = 9 : 1$		

A. Wakopak® Fluofix®-II 120E

Fluorocarbon Chains bonded Highly Purified Spherical Silica-Gel

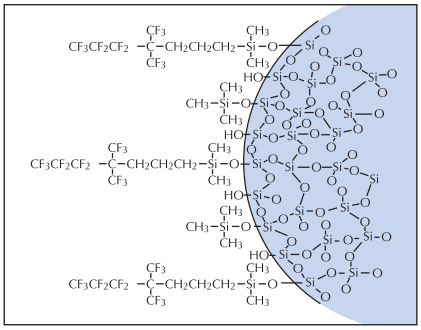
Wakopak® Fluofix®-II 120E is a reversed-phase HPLC column packed with highly purified spherical 5μm silica-gel (SiO_2 > 99.99%), to which fluorocarbon chains are bonded.

Fluofix®-II 120E can provide the best separation for fluorine compounds, isomers in particular. The end-capping efficiency of Fluofix®-II 120E is remarkably improved and its non-specific adsorption is minimized compared with Fluofix 120E. Because of its high retention capacity, Fluofix®-II 120E has higher selectivity and versatility.

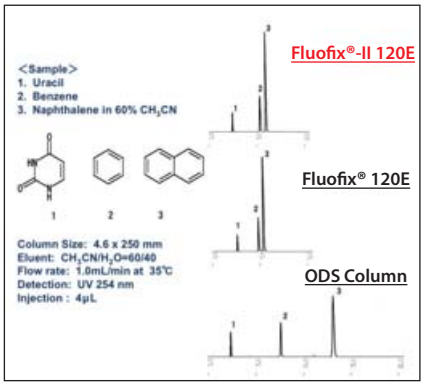
The separation mode of this column is basically reversed phase like hydrocarbon modified silica-gel column such as ODS, C8, etc., its retention capacity is comparable as C4. Because of its strong hydrophobic/lipophobic properties as well as its characteristic fluorinated phases, this column specifically shows highly retaining and separating capabilities depending on the characteristics of the specimens.

[Features]

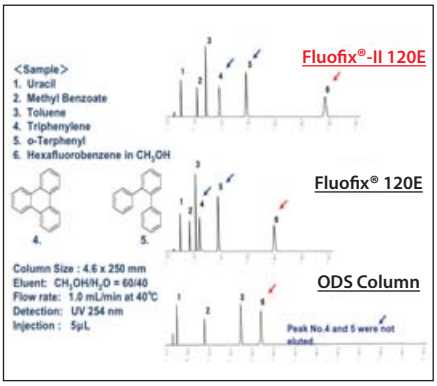
1. **Improvement in separation capability**
2. **High recognition capability of halogen compounds such as fluorides**
3. **Basic compounds are also applicable**
4. **Recognition of specific compounds by adamant branched fluorocarbon chain**
5. **High durability by chemically stable fluorocarbon**



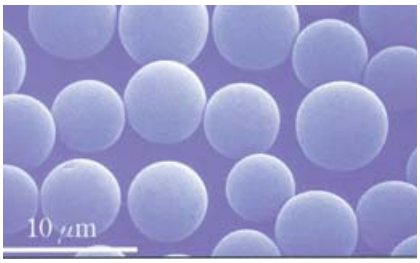
Schematic Surface Model of fluofix



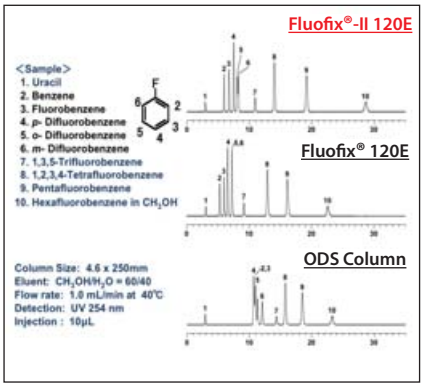
Separation of Low Molecular Compounds



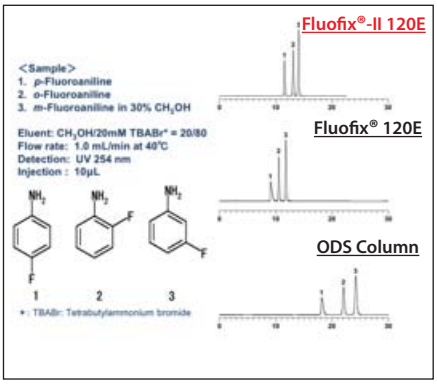
Recognition of Planar Structures and Fluorinated Compounds



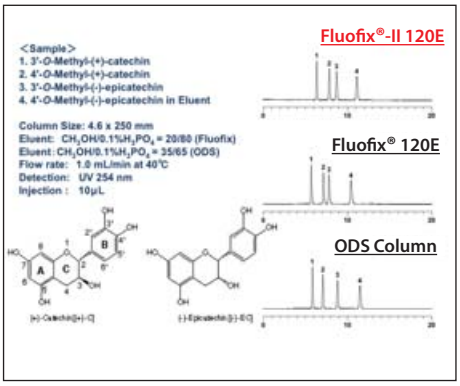
High Purity Spherical Silicagel (99.99+%)



Separation of Fluorinated Regioisomers



Separation of Basic Compounds



Separation of Catechins

Description	Particle Size	Pore Size	Surface Area	End-capping	Purpose	Size*(I.D.×length(mm))
Wakopak® Fluofix®-II 120 E	5μm	12 nm	300 m2/g	Yes	for Ordinary analysis	2.0; 4.6 × 50; 150; 250
Wakopak® Fluofix® 120 E						4.6 × 150; 250
Wakopak® Fluofix® 120 N				No	for acidic compounds	

*: Available in a variety of inside diameters and lengths. Please contact us for details.

B. Syringe-type solid-phase extraction column

Sample Pretreatment

Presep Polymer Column-Ion Exchange

Presep series are solid-phase extraction columns. We have launched the 4 kinds of syringe-type ion-exchange columns, in which polymer series ion-exchange resin are filled. These are applicable to sample pretreatment in environmental analyses, food analysis and so on.

Description	Wako Cat. No.	Pkg. Size	Sorbent Weight	Column Size	Functional Mode	ion-exchange group	Type	exchange capacity	Particle Size	General Application
Presep DEA	292-61701	5 × 10 pieces	250 mg	6 mL (Syringe-type)	Anion Exchange (weak)	diethylaminoethyl	Cl	0.114±0.013	45~90μm	Ionic, acidic analytes
Presep QA	296-61601	5 × 10 pieces			Anion Exchange (strong)	trimethylaminoethyl		0.110±0.013		
Presep CM	298-61801	5 × 10 pieces			Cation Exchange (weak)	carboxymethyl	Na	0.103±0.013		Ionic, basic analytes
Presep S	294-61901	5 × 10 pieces			Cation Exchanger (strong)	sulfonylpropyl		0.125±0.013		

Related Products

Presep RPP series are solid-phase extraction column, in which hydrophilic reverse phase polymer are filled. Compared with silica system fillers, it has advantages such as high retention of polar compounds are low absorption due to interaction with basic compounds.

Description	Wako Cat. No.	Pkg. Size	Sorbent Weight	Column Size	Functional Mode	Filler	Pore Size	Pore Volume	Particle Size	General Application
Presep RPP (Syringe-type)	294-36851	5 × 10 pieces	60 mg	3 mL	Reverse Phase Polymer (RPP)	styrene vinyl benzene poly-methacrylate	9 nm	1.2 mL/g	60 μm	polar compounds and low absorption
	290-36951	5 × 10 pieces	200 mg	6 mL						
	290-37051	5 × 10 pieces	500 mg	6 mL						
Presep-C RPP (Long cartridge)	293-41951	3 × 10 pieces	360 mg	cartridge						
Presep-C RPP (Short cartridge)	297-41851	3 × 10 pieces	190 mg	cartridge						

A. Solvents for PCB Analysis

Ethyl Acetate 300 and 5000, suitable for Pesticide Residue-PCB Analysis

Ethyl Acetate 300 and 5000, suitable for pesticide residue-PCB analysis are now also availabe in 3L package sizes. This product ensures safety as it contains no interfering substances in the 300- or 5000-fold concentrated solution, and is ideal for the extraction of pesticides from the test substances and for purification.

Suitability for Pesticideresidue-PCB Analysis

The 300- and 5000-fold concentrated solution guarantee the followings :

① With the GC-ECD, the level of impurities does not exceed 1/2 of the peak of the organochlorine pesticide γ-BHC (20pg).

② With GC-FPC, the level of impurities does not exceed 1/25 of the peak of the organophosphorous pesticide MPP (0.5ng)

Description	Wako Cat. No.	Pkg. Size	Specification
Ethyl Acetate 300	052-04421	1 L	Appearance : Colorless, clear liquid Density (20℃) : 0.899 ~ 0.902 g/mL Water : max. 0.05 % Residue after evaporation : max. 2 ppm Suitability for pesticide residue-PCB analysis : to pass test Assay (cGC) : min. 99.7%
	058-04423	3 L	
Ethyl Acetate 5000	052-06981	1 L	
	058-06983	3 L	

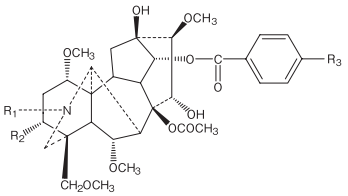
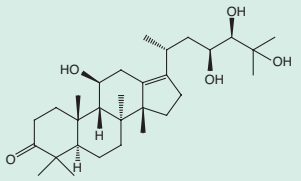
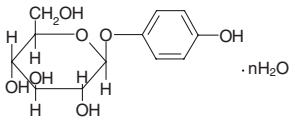
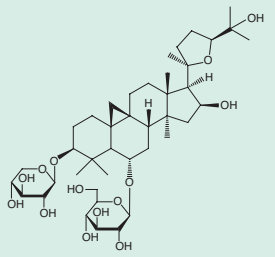
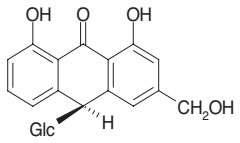
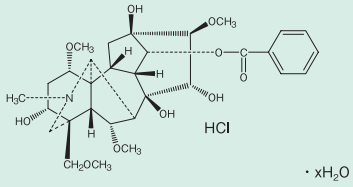
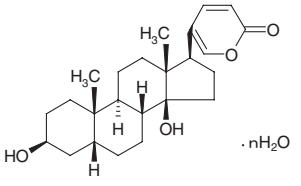
B. Solvents for Dioxins Analysis

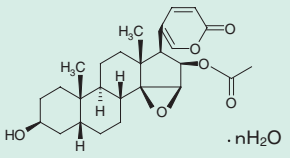
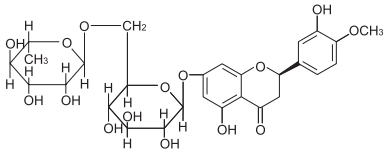
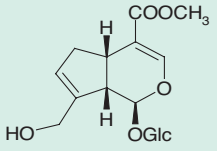
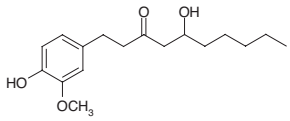
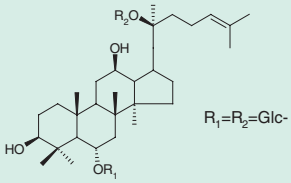
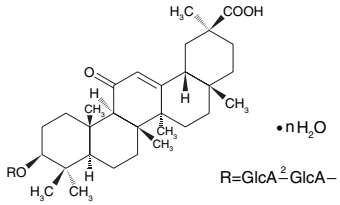
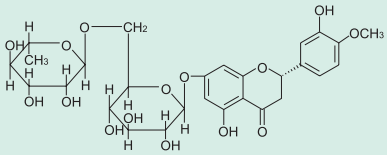
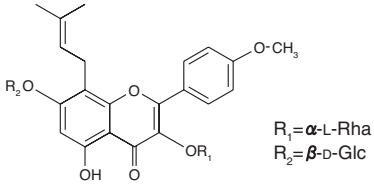
Dimethyl Sulfoxide is available as a solvent used in the analysis of dioxins.
This product is used to determine Dibenzo-p-dioxins, Dibenzofurans, and Coplanar PCBs by high resolution GC/MS, and ensures a sufficiently low concentration.
It can be used for the preparation of standard solutions, with the ELISA kit, and in the process of analyzing dioxins such as during distribution of DMSO.

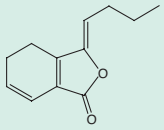
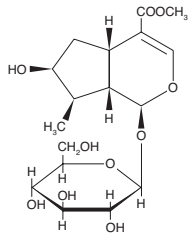
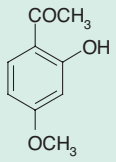
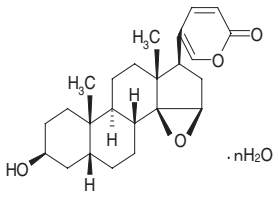
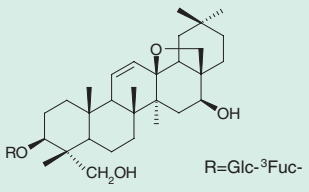
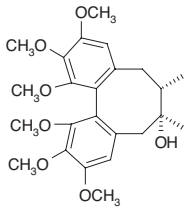
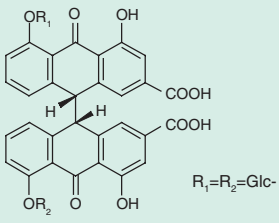
Description	Wako Cat. No.	Pkg. Size	Density (20)	Suitability for dioxins determination			(unit)
Dimethyl Sulfoxide, 99.0+% (cGC)	041-29395	500 mL	1.100 ~ 1.106 g/mL	Dibenzo-*p*-dioxin	(Cl: 4 ~ 7)	: ≦ 5	fg/μL
					(Cl: 8)	: ≦ 10	
				Dibenzofuran	(Cl: 4 ~ 7)	: ≦ 5	
					(Cl: 8)	: ≦ 10	
				Coplanar PCB	-	: ≦ 5	

Other solvents for Dioxins Analysis

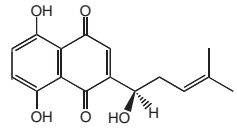
Description	Wako Cat. No.	Pkg. Size	Specifications				(unit)
				Suitability for dioxins determination			
Acetone, 99.8+% (cGC)	010-17831 016-17833	1 L 3 L	Density (20℃): 0.789~0.792g/mL	Dibenzo-*p*-dioxin	(Cl: 4 ~ 6)	: ≦ 1	pg/L
					(Cl: 7 or 8)	: ≦ 5	
				Dibenzofuran	(Cl: 4 ~ 6)	: ≦ 1	
					(Cl: 7 or 8)	: ≦ 5	
				Coplanar PCB	-	: ≦ 10	
Decane, 99.5+% (cGC)	048-28543 042-28541	2 mL × 5 100 mL	Density (20℃): 0.727~0.735g/mL	Dibenzo-*p*-dioxin	(Cl: 4 ~ 6)	: ≦ 10	fg/μL
					(Cl: 7 or 8)	: ≦ 50	
				Dibenzofuran	(Cl: 4 ~ 6)	: ≦ 10	
					(Cl: 7 or 8)	: ≦ 50	
				Coplanar PCB	-	: ≦ 10	
Dichloromethane, [Methylene Chloride] 99.5+% (cGC, except MeOH) Stabilizer: Methanol [0.2~0.5%]	048-26321 044-26323	1 L 3 L	Density (20℃): 1.320~1.331g/mL	Dibenzo-*p*-dioxin	(Cl: 4 ~ 6)	: ≦ 1	pg/L
					(Cl: 7 or 8)	: ≦ 5	
				Dibenzofuran	(Cl: 4 ~ 6)	: ≦ 1	
					(Cl: 7 or 8)	: ≦ 5	
Diethylene glycol, 99.0+% (cGC)	040-28645	500 mL	Solubility in water: to pass test Density (20℃): 1.116~1.123g/mL	Dibenzo-*p*-dioxin	(Cl: 4 ~ 6)	: ≦ 5	pg/L
					(Cl: 7 or 8)	: ≦ 25	
				Dibenzofuran	(Cl: 4 ~ 6)	: ≦ 5	
					(Cl: 7 or 8)	: ≦ 25	
				Coplanar PCB	(2,3',4,4',5-PeCB)	: ≦ 100	
					(Other Co-PCB)	: ≦ 50	
Diethyl ether, 99.5+% (cGC)	049-27451	1 L	Density (20℃): 0.712~0.714g/mL	Dibenzo-*p*-dioxin	(Cl: 4 ~ 6)	: ≦ 1	pg/L
					(Cl: 7 or 8)	: ≦ 5	
				Dibenzofuran	(Cl: 4 ~ 6)	: ≦ 1	
					(Cl: 7 or 8)	: ≦ 5	
Ethanol (99.5), (cGC) [Ethyl Alcohol (99.5)]	050-06661 056-06663	1 L 3 L	Density (20℃): 0.789~0.792g/mL	Coplanar PCB	-	: ≦ 10	
Fluorobenzene, 98.0+% (cGC)	061-04551	200 mL	Density (20℃): 1.025~1.035g/mL	Dibenzo-*p*-dioxin	(Cl: 4 ~ 7	: ≦ 5	fg/μL
					(Cl: 8)	: ≦ 10	
				Dibenzofuran	(Cl: 4 ~ 7)	: ≦ 5	
					(Cl: 8)	: ≦ 10	
				Coplanar PCB	-	: ≦ 5	
Hexane, 96.0+% (cGC) [n-Hexane]	083-07391 089-07393	1 L 3 L	Density (20℃): 0.658~0.662g/mL	Dibenzo-*p*-dioxin	(Cl: 4 ~ 6)	: ≦ 1	pg/L
					(Cl: 7 or 8)	: ≦ 5	
				Dibenzofuran	(Cl: 4 ~ 6)	: ≦ 1	
					(Cl: 7 or 8)	: ≦ 5	
Methanol, 99.8+% (cGC) [Methyl Alcohol]	136-13461 132-13463	1 L 3 L	Density (20℃): 0.791~0.793g/mL	Coplanar PCB	-	: ≦ 10	
Nonane, 98.0+% (cGC) [n-Nonane]	148-07351 142-07354	2 mL × 5 100 mL	Density (20℃): 0.713~0.721g/mL	Dibenzo-*p*-dioxin	(Cl: 4 ~ 6)	: ≦ 5	fg/μL
					(Cl: 7 or 8)	: ≦ 10	
				Dibenzofuran	(Cl: 4 ~ 6)	: ≦ 5	
					(Cl: 7 or 8)	: ≦ 10	
				Coplanar PCB	-	: ≦ 5	
Petroleum ether Content: 5~15 %	160-20231	1 L	Boiling range (30~60℃): 90+vol%	Dibenzo-*p*-dioxin	(Cl: 4 ~ 6)	: ≦ 1	pg/L
					(Cl: 7 or 8)	: ≦ 5	
				Dibenzofuran	(Cl: 4 ~ 6)	: ≦ 1	
					(7, 8 chlorinated)	: ≦ 5	
				Coplanar PCB	-	: ≦ 10	
2% Sodium Chloride Solution	195-12631	1 L	-	Dibenzo-*p*-dioxin	(Cl: 4)	: ≦ 1	pg/L
					(Cl: 5 or 6)	: ≦ 2	
					(Cl: 7 or 8)	: ≦ 5	
10% Sodium Chloride Solution	192-12641	1 L		Dibenzofuran	(Cl: 4)	: ≦ 1	
					(Cl: 5 or 6)	: ≦ 2	
					(Cl: 7 or 8)	: ≦ 5	
				Coplanar PCB	-	: ≦ 5	
Toluene, 99.7+% (cGC)	203-14141 209-14143	1 L 3 L	Density (20℃): 0.864~0.868g/mL	Dibenzo-*p*-dioxin	(Cl: 4 ~ 6)	: ≦ 1	pg/L
					(Cl: 7 or 8)	: ≦ 5	
				Dibenzofuran	(Cl: 4 ~ 6)	: ≦ 1	
					(Cl: 7 or 8)	: ≦ 5	
				Coplanar PCB	-	: ≦ 10	

Wako Cat.#(Pkg. Size)	Description
012-20581 (0.35mg)	**Aconitum Diester Alkaloids Standard** for the JP Crude Drugs Test (for Purity Test) <Contents> aconitine: 0.05 mg; jesaconitine: 0.05 mg; mesaconitine: 0.1 mg; hypaconitine: 0.15 mg Source: *Aconitum carmichaeli* Debeaux, *Aconitum japonicum* Thunberg (*Ranunculaceae*) Active ingredient contained in Powdered Processed Aconite Root. This product is used for the preparation of standard solutions of mixtures of diester alkaloids in aconite roots for reagents and test solutions and of standard solutions of mixtures for purity tests as described in the general test procedures in the guidelines of Supplement 2 to the Japanese Pharmacopoeia (14th ed.). To be used after the product has been accurately dissolved in 5mL of acetonitrile-phosphate buffer (1:1).  aconitine: R_1 C_2H_5, R_2 OH, R_3 H jesaconitine: R_1 C_2H_5, R_2 OH, R_3 OCH_3 mesaconitine: R_1 CH_3, R_2 OH, R_3 H hypaconitine: R_1 CH_3, R_2 H, R_3 H
018-20681 (20mg)	**Alisol A** for the JP Crude Drugs Test (for TLC) Source: *Alisma orientale* Juzepczuk (*Alismataceae*) Active ingredient contained in Alisma Rhizome. Used to verify the ingredients of Saireito extract. CAS No. 19885-10-0 $C_{30}H_{50}O_5$=490.72 
011-20291 (20mg)	**Arbutin** for the JP Crude Drugs Test (for Ingredient Content Determination and TLC) Source: *Arctostaphylos uva-ursi* (Linné) Sprengel (*Ericaceae*) Active ingredient contained in Bearberry Leaf. Has antibacterial properties that prevent coliform growth, and medicinal properties including enhanced therapeutic effects against contact dermatitis to picryl chloride in the mouse.  CAS No. 497-76-7 $C_{12}H_{16}O_7 \cdot nH_2O$ ($C_{12}H_{16}O_7$=272.25)
015-20691 (20mg)	**Astragaloside IV** for the JP Crude Drugs Test (for TLC) Source: *Astragalus membranaceus* Bunge, *Astragalus mongholicus* Bunge (*Leguminosae*) Active ingredient contained in Astragali Radix. Used to verify the ingredients of Hochuekkito extract. CAS No. 84687-43-4 $C_{41}H_{68}O_{14}$=784.97 
028-15231 (10mg)	**Barbaloin** for the JP Crude Drugs Test (for Ingredient Content Determination and TLC) Source: *Aloe ferox* Miller, *Aloe africana* Miller/ *Aloe spicata* Baker Active ingredient contained in Aloe. Has cathartic properties when powdered aloe is administered orally to rats. CAS No. 1415-73-2 $C_{21}H_{22}O_9$=418.40 
022-15491 (5mg)	**Benzoylmesaconine Hydrochloride** for the JP Crude Drugs Test (for TLC) Source: *Aconitum carmichaeli* Debeaux *Aconitum japonicum* Thunberg (*Ranunculaceae*) Active ingredient contained in Aconite Tuber. CAS No. 126266-38-4 $C_{31}H_{43}NO_{10} \cdot HCl \cdot xH_2O$ 
025-15241 (20mg)	**Bufalin** for the JP Crude Drugs Test (for Ingredient Content Determination) Source: *Bufo bufo gargarizans* Cantor Bufalin is an active ingredient contained in the venom of Bufo bufo gargarizans Cantor. Has local anesthetic properties on the cornea of guinea pigs and rabbits, and is more effective than Cinobufagin or Resibufogenin. CAS No. 465-21-4 $C_{24}H_{34}O_4 \cdot nH_2O$ ($C_{24}H_{34}O_4$=386.52) 

Wako Cat.#(Pkg. Size)	Description
030-19491 (20mg)	**Cinobufagin** for the JP Crude Drugs Test (for Ingredient Content Determination) Source: *Bufo bufo gargarizans* Cantor Cinobufagin is an active ingredient contained in the venom of Bufo bufo gargarizans Cantor. Has cardiotonic properties, and properties of restoring the contractile properties of the heart in cases of heart failure induced by Pentobarbital in studies using dog heart-lung preparation.  CAS No. 470-37-1 $C_{26}H_{34}O_6 \cdot nH_2O$ ($C_{26}H_{34}O_4$=442.52)
085-08211 (10mg)	**Epihesperidin Standard** [(2*R*)-Hesperidin Standard] for Crude Drugs Determination Source: *Citrus natsudaidai*, *Citrus unshiu*, *Citrus aurantium* var *daidai* Flavonoid and a type of vitamin P contained in citrus. Hesperidin (*S*) and Epihesperidin (*R*) after chiral resolution are available. 
071-05071 (20mg)	**Geniposide** for the JP Crude Drugs Test (for Ingredient Content Determination and TLC) Source: *Gardenia jasminoides* Ellis (*Rubiaceae*) Geniposide is an active ingredient contained in gardenia (gardenia fruit). As genipin, has choleretic properties in the gastrointestinal tract of rats.  CAS No. 24512-63-8 $C_{17}H_{24}O_{10}$=388.37
074-05061 (20mg)	**[6]-Gingerol** for the JP Crude Drugs Test (for TLC) Source: *Zingiber officinale* Roscoe (*Zingiberaceae*) Active ingredient contained in ginger. Has numerous medicinal properties, among which the inhibition of constriction and enhancement of isolated vessels in mice and rats have been reported.  CAS No. 23513-14-6 $C_{17}H_{26}O_4$=294.39
076-05021 (10mg)	**Ginsenoside Rg_1** for the JP Crude Drugs Test (for TLC) Source: *Panax ginseng* C. A. Meyer (*Panax Schinseng* Nees) (*Araliaceae*) Active ingredient contained in ginseng roots. Stimulates the cerebral cortex of rats and enhances the secretion of neurotransmitters at the synapse.  CAS No. 22427-39-0 $C_{42}H_{72}O_{14}$=801.01
070-05161 (20mg)	**Glycyrrhizic Acid** for the JP Crude Drugs Test (for TLC) Source: *Glycyrrhiza uralensis* Fisher, *Glycyrrhiza glabra* Linné (*Leguminosae*) Active ingredient contained in Glycyrrhiza. CAS No. 1405-86-3 $C_{42}H_{62}O_{16}$=822.93 
086-08361 (10 mg)	**Hesperidin** for the JP Crude Drugs Test (for TLC) Source: *Citrus natsudaidai*, *Citrus unshiu*, *Citrus aurantium* var *daidai* Flavonoid and a type of vitamin P contained in citrus. Hesperidin (*S*) and Epihesperidin (*R*) after chiral resolution are available. CAS No. 520-26-3 $C_{28}H_{34}O_{15}$=610.56  $C_{28}H_{34}O_{15}$=610.56
094-05281 (20mg)	**Icariin** for the JP Crude Drugs Test (for TLC) Source: *Epimedium sagittatum* Maximowicz Active ingredient contained in Epimedii herba. CAS No. 489-32-7 $C_{33}H_{40}O_{15}$=676.66 

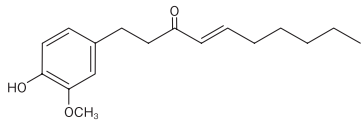
Wako Cat.#(Pkg. Size)	Description
128-05311 (20mg)	**(*Z*)-Ligustilide** for the JP Crude Drugs Test (for TLC) Source: *Angelica acutiloba* Kitagawa, *Angelica acutiloba* Kitagawa var. *sugiyamae* Hikino (*Umbelliferae*) Active ingredient contained in Angelica Root. Used to verify the ingredients of Hochuekkito extract. CAS No. 4431-01-0 $C_{12}H_{14}O_2$=190.24 
123-05121 (20mg)	**Loganin** for the JP Crude Drugs Test (for TLC) Source: *Cornus officinalis* Siebold et Zuccarini (*Cornaceae*) Active ingredient contained in the pseudocarp of the Cornus Fruit CAS No. 18524-94-2 $C_{17}H_{26}O_{10}$=390.38 
167-21721 (10mg)	**Paeonol** for the JP Crude Drugs Test (for Ingredient Content Determination and TLC) Source: *Paeonia suffruticosa* Andrews (*Paeonia moutan* Slims) (*Paeoniaceae*) Active ingredient contained in the peony root bark. Numerous medicinal properties have been reported, such as that the administration of its infused extract prevents adjuvant arthritis. CAS No. 552-41-0 $C_9H_{10}O_3$=166.18 
187-01921 (20mg)	**Resibufogenin** for the JP Crude Drugs Test (for Ingredient Content Determination and TLC) Source: *Bufo bufo gargarizans* Cantor Resibufogenin is an active ingredient contained in the venom of Bufo bufo gargarizans Cantor. Has local anesthetic properties, anti-inflammatory properties, and cardiotonic properties. CAS No. 465-39-4 $C_{24}H_{32}O_6 \cdot nH_2O$ ($C_{24}H_{32}O_6$=442.54) 
190-13541 (10mg)	**Saikosaponin a** for the JP Crude Drugs Test (for TLC) Source: *Bupleurum falcatum* Linné (*Umbelliferae*) Active ingredient contained in Bupleuri Radix. Has central depressant properties such as antitussive properties in guinea pigs. CAS No. 20736-09-8 $C_{42}H_{68}O$=780.98 
197-13551 (20mg)	**Schizandrin** for the JP Crude Drugs Test (for TLC) Source: *Schisandra chinensis* Baillon (*Schisandraceae*) Active ingredient contained in Schisandra Fruit. Has antitussive properties and prevents hepatic disorders in mice, rats, and rabbits. CAS No. 7432-28-2 $C_{24}H_{32}O_7$=432.51 
194-13941 (10mg)	**Sennoside B** for the JP Crude Drugs Test (for TLC) Source: *Cassia angustifolia* Vahl, *Cassia acutifolia* Delile (*Leguminosae*) Active ingredient contained in Senna Leaf. Used to determine the ingredients contained in powdered senna. CAS No. 128-57-4 $C_{42}H_{38}O_{20}$=862.74 

Wako Cat.#(Pkg. Size)	Description
198-13581 (10mg)	**Shikonin (mixture of optical isomers about 6:1)** for Crude Drugs Determination Active ingredient contained in Shikon. Enhances wound healing and granulation of wounds, prevents edema, and has anti-inflammatory and antibacterial properties.
198-13601 (10mg)	**Shikonin (mixture of optical isomers about 1:1)** for Crude Drugs Determination Assay (HPLC): 98.0+%
199-14111 (5mg)	**[6]-Shogaol** for the JP Crude Drugs Test (for TLC) Source: *Zingiber officinale* Roscoe (*Zingiberaceae*) Active ingredient contained in Ginger.



$C_{16}H_{16}O_5$=288.30

CAS No. 555-66-8
$C_{17}H_{24}O_3$=276.37



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