

# Diabetes • Metabolism

Research Reagents



# Diabetes • Metabolism Related Research Reagents

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## GLP-1 ELISA Kit

GLP-1 is the gastrointestinal peptide hormone secreted from intestinal L cells, and shows the hypoglycemic action through the enhancement of insulin secretion and the suppression of glucagon secretion by the sugar stimulus. The report has been issued that GLP-1 is useful for the treatment of type 2 diabetes as the new therapeutic agent for diabetes.

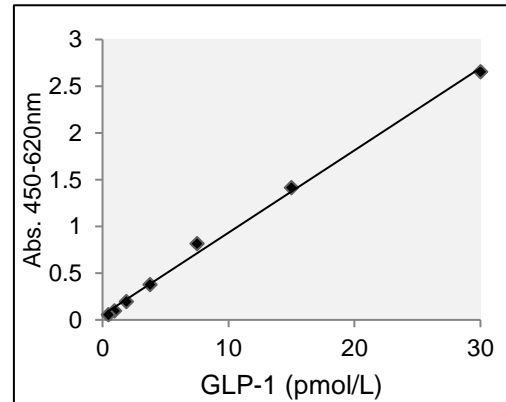
### GLP-1 ELISA Kit Wako, High Sensitive (Total GLP-1 assay)

GLP-1 ELISA Kit Wako, High Sensitive, is a sandwich ELISA system for quantitative measurement of mouse/rat GLP-1.

#### [Kit Contents]

	Components	Amount
1	Antibody-coated Plate	1 plate
2	GLP-1 Standard	1 bottle
3	Buffer Solution	60 mL/1 bottle
4	Biotinylated Anti GLP-1 Antibody Solution	100 µL/1 vial
5	Peroxidase-conjugated Streptavidin Solution	100 µL/1 vial
6	TMB Solution	12 mL/1 bottle
7	Stop Solution	12 mL/1 bottle
8	Wash Solution (x10)	100 mL/1 bottle
9	Plate Seal	4 sheets

#### [Standard Curve]



#### [Performance]

- Concentration of the standard solution : 0.94-30 pmol/L
- Dynamic range : 4.7-150 pmol/L \*Case of 10 µL
- Sample volume : 10 µL
- Measure time : 4 hour
- Cross-reactivity : Mouse, Rat

#### [References]

- 1) Harada, K. *et al.*: *Biochem. Biophys. Res. Commun.*, **501**, 1009(2018)
- 2) Ito, F. *et al.*: *Eur. J. Pharmacol.*, **853**, 136(2019)
- 3) Harada, K. *et al.*: *Biochem. Biophys. Res. Commun.*, **500**, 723(2018)

Product Code	Product	Grade	Pack
299-75501	GLP-1 ELISA Kit Wako, High Sensitive	for Diabetes Research	96 tests

## Adiponectin ELISA Kit

### LBIS Mouse/Rat HMW Adiponectin ELISA Kit

Adiponectin is one of cytokines secreted from adipocyte (adipocytokines, adipokines), and controls lipid metabolism and insulin sensitivity. Adiponectin is an important substance showing anti-diabetic, anti-atherosclerotic, and anti-inflammatory actions.

Mouse/Rat HMW Adiponectin ELISA Kit is a sandwich ELISA system for quantitative measurement of mouse or rat High Molecular Weight Adiponectin.

#### [Kit Contents]

1	Antibody-coated Plate	1 plate
2	Standard Adiponectin (2,000 ng/mL)	200 µL/1 vial
3	Buffer Solution	60 mL/1 bottle
4	HRP-labeled anti-adiponectin antibody	100 µL/1 vial
6	TMB Solution	12 mL/1 bottle
7	Stop Solution	12 mL/1 bottle
8	Wash Solution (x10)	100 mL/1 bottle
9	Plate Seal	3 sheets

#### [Performance]

- Assay range : 3.13~200 ng/mL
- Test Time : 4 hours
- Sample volume : 10 µL
- Samples : Mouse/Rat Serum, Plasma

#### [Cross-reactivity]

	Name	Cross-reactivity (%)
Mouse	Adiponectin (HMW)	100
	Adiponectin (Hexamer)	< 5
	Adiponectin (Trimer)	-
	Adiponectin (Monomer)	-
Rat	Adiponectin (HMW)	100
	Adiponectin (Monomer)	-

#### [References]

- 1) Kim, TH. *et al.*: *Eur. J. Pharmacol.*, **830**, 95(2018)
- 2) Watanabe, K. *et al.*: *Obes. Surg.*, **28**, 1532(2018)
- 3) Tobita, H. *et al.*: *Mol. Med. Rep.*, **17**, 6840(2018)

Product Code	Maker No.	Product	Pack
634-13071	AKMAN-011	LBIS Mouse/Rat HMW Adiponectin ELISA Kit	96 tests

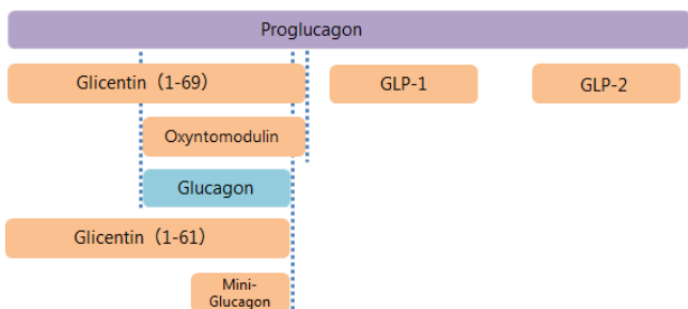
## Glucagon ELISA Kit

Glucagon is a peptide hormone comprising 29 amino acids and secreted from  $\alpha$  cells in the islets of Langerhans. Physiologically, it acts on liver to degrade glycogen to glucose and increase blood glucose level. Together with insulin, it plays an important role in maintaining blood glucose level.

### Glucagon ELISA Kit *Wako* (Sandwich method)

This kit uses sandwich ELISA with a monoclonal antibody that recognizes N-terminal and a monoclonal antibody that recognizes C-terminal of glucagon. The assay with this kit shows little cross-reactivity, if any, to glucagon-related peptides such as glicentin, oxyntomodulin, GLP-1 or GLP-2.

#### Glucagon and glucagon-like peptide



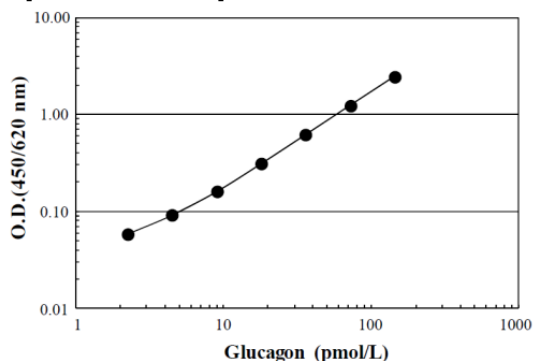
#### [Cross-reactivity]

Name	Cross-reactivity (%)
Glicentin(1-69) (human)	0.68
Glicentin(1-69) (rat)	0.96
Glicentin(1-69) (mouse)	0.97
Glicentin(1-61) (human)	0.95
Glicentin(1-61) (rat)	not confirmed
Glicentin(1-61) (mouse)	not confirmed
Oxyntomodulin (human, rat and mouse)	0.64
Mini-glucagon (human, rat and mouse)	N.D.

#### [Kit Contents]

1	Antibody-coated Plate	1 plate
2	Glucagon Standard	0.287 pmolL / 1 vial
3	HRP conjugated Anti Glucagon Antibody Solution	12 mL/1 bottle
4	TMB Solution	12 mL/1 bottle
5	Stop Solution	12 mL/1 bottle
6	Buffer	12 mL/1 bottle
7	Wash Solution (x20)	50 mL/1 bottle
8	Plate Seal	2 sheets

#### [Standard Curve]



#### [Performance]

- Assay range : 7.8~500 pg/mL
- Test Time : 20 hours
- Sample volume : 10  $\mu$ L
- Samples : Human/Mouse/Rat Serum, Plasma, Cell culture medium

Product Code	Product	Grade	Pack
292-80001	Glucagon ELISA Kit <i>Wako</i> (Sandwich method)	for Obesity Research	96 tests

## PYY ELISA Kit

PYY is a gastrointestinal peptide hormone consisting of 36 amino acid residues. It is mainly released from endocrine cells localizing in the intestinal tract after food ingestion, and inhibits appetite through the vagus nerve and blood.

### Mouse/Rat PYY ELISA Kit Wako

This ELISA kit is used for the quantitative determination of mouse and rat PYY in plasma and serum samples.

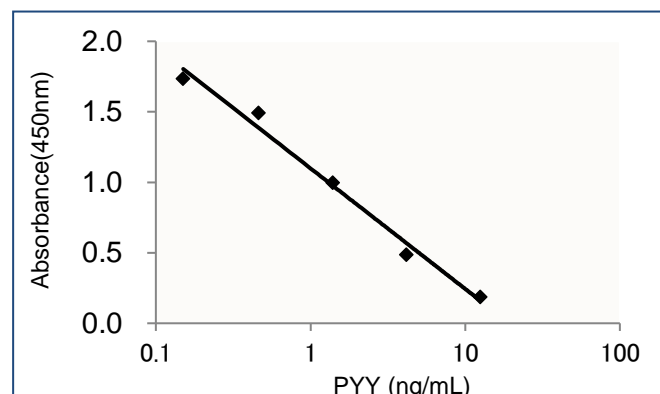
#### [Performance]

- Assay range : 0.15~12.5 ng/mL
- Test Time : 20 hours
- Sample volume : 25  $\mu$ L
- Samples : Mouse/Rat Serum, Plasma

#### [Kit Contents]

1	Antibody-coated Plate	1 plate
2	Mouse/Rat PYY Standard	12.5 ng/ 1 vial
3	Biotinylated Mouse/Rat PYY	1 vial
4	Anti Mouse/Rat PYY , Rabbit	8.5 mL/1 bottle
5	HRP Labeled Streptavidin Solution	12 mL/1 bottle
6	Enzyme Substrate Solution	12 mL/1 bottle
7	Stop Solution	12 mL/1 bottle
8	Buffer	25 mL/1 bottle
9	Wash Solution (concentrated)	50 mL/1 bottle
10	Plate Seal	3 sheets

#### [Standard Curve]



#### [References]

- 1) Watanabe, K. *et al.*: *PLoS One.*, **13**, e0202083(2018)
- 2) Nakatani, A. *et al.*: *Biochem. Biophys. Res. Commun.*, **501**, 955(2018)
- 3) Miyamoto, J. *et al.*: *PLoS One.*, **13**, e0196579(2018)

Product Code	Product	Grade	Pack
291-73501	Mouse/Rat PYY ELISA Kit Wako	for Obesity Research	96 tests

## LH ELISA Kit

### LH Rat ELISA Kit

LH(Luteinizing Hormone) is produced and stored in basophilic cells called gonadotrophs in the anterior pituitary gland. LH is found in all vertebrates from fishes to mammals. Some reports indicated the presence of LH-like substance in the testis. Rat LH ELISA Kit (S-type) is a sandwich ELISA system for quantitative measurement of rat LH.

#### [Performance]

- Assay range : 1.565 ~ 50 ng/mL
- Test Time : 4 hours
- Sample volume : 10  $\mu$ L
- Samples : Rat Serum, Plasma

#### [References]

- 1) Satou, K. *et al.*: *J. Reprod. Dev.*, **63**, 199(2017)
- 2) Takeda, T. *et al.*: *J. Toxicol. Sci.*, **42**, 13(2017)
- 3) Tomori, Y. *et al.*: *Neurosci. Res.*, **117**, 35(2016)

Product Code	Maker No.	Product	Pack
636-23921	AKRLH-010S	LBIS Rat LH ELISA Kit (S-type)	96 tests

## Insulin ELISA Kit

Insulin is a peptide hormone secreted from B cells of islet of Langerhans in the pancreas with a molecular weight of about 5800 and p/5.4. It is consisted of 2 chains, A and B. It has 3 disulfide bonds formed between A6 and A11, A7 and B7, and A20 and B19.

FUJIFILM Wako Shibayagi Corporation offers a variety of kits for the measurement of insulin for your purposes. Select a kit that fits your researches.

Type	U type	U-E type	S type		RTU type		T type		H type		Concentration (pg/mL)	
Animal	Mouse	Rat	Mouse	Rat	Mouse	Rat	Mouse	Rat	Mouse	Rat		
Test time	3 hours	3 hours	3 hours	2h 50m	2h 50m	2h 50m	3 hours	3 hours	3 hours	3 hours		
Assay Range											200,000	
									●	●	100,000	
						●	●			●	●	12,000
					●	●	●	●	●	●	●	10,000
				●	●	●	●	●	●	●	●	5,000
	●	●	●	●	●	●	●	●	●	●	●	2,500
	●	●	●	●	●	●	●	●	●	●	●	500
	●	●	●	●	●	●	●	●	●			156
	●	●	●	●	●	●	●					100
	●	●	●									78
	●	●										39
											30	

- U type, U-E type: High sensitivity type. Suitable for low insulin concentration like after fasting period.
- S type: Reduce cross-reaction with proinsulin, specific detect of insulin.
- RTU type: Contains 6 concentration standard, antibody solution, POD · Avidin solution that are diluted and ready to use.
- T type: Normal type (standard kit for insulin analysis).
- H type: For analysis of highly concentrated insulin sample.

Product Code	Maker No.	Product	Assay Range	Package
633-03411	AKRIN-031	LBIS Mouse Insulin ELISA Kit (U-type)	39-2,500 pg/mL	96 tests
636-05581	AKRIN-130	LBIS Rat Insulin ELISA Kit (U-E type)	39-2,500 pg/mL	96 tests
636-07281	AKRIN-011S	LBIS Mouse Insulin ELISA Kit (S-type)	78-5,000 pg/mL	96 tests
637-07191	AKRIN-010S	LBIS Rat Insulin ELISA Kit (S-type)	0.1-10 ng/mL	96 tests
639-23911	AKRIN-011RU	LBIS Mouse Insulin ELISA Kit(RTU)	100-12,000 pg/mL	96 tests
636-24141	AKRIN-010RU	LBIS Rat Insulin ELISA Kit(RTU)	100-12,000 pg/mL	96 tests
634-01481	AKRIN-011T	LBIS Mouse Insulin ELISA Kit	0.156-10 ng/mL	96 tests
637-01471	AKRIN-010T	LBIS Rat Insulin ELISA Kit	0.156-10 ng/mL	96 tests
630-10371	AKRIN-011H	LBIS Mouse Insulin ELISA Kit(H-type)	0.5-100 ng/mL	96 tests
633-10621	AKRIN-010H	LBIS Rat Insulin ELISA Kit(H-type)	0.5-100 ng/mL	96 tests

## Proinsulin ELISA Kit

Proinsulin, known as a precursor of insulin, is produced in B-cells of islet of Langerhans in the pancreas.

### Mouse/Rat Proinsulin ELISA Kit

Mouse/Rat Proinsulin ELISA Kit is a sandwich ELISA system for quantitative measurement of total mouse/rat proinsulin.

#### [Performance]

- Assay range : 7.35~471.5 pg/mL
- Test Time : 5 hours
- Sample volume : 10 µL
- Samples : Mouse/Rat Serum, Plasma

#### [Kit Contents]

1	Antibody-coated Plate	1 plate
2	GLP-1 Standard	1 bottle
3	Buffer Solution	60 mL/1 bottle
4	Biotinylated Anti GLP-1 Antibody Solution	100 µL/1 vial
5	HRP-conjugated Streptavidin	100 µL/1 vial
6	TMB Solution	12 mL/1 bottle
7	Stop Solution	12 mL/1 bottle
8	Wash Solution (x10)	100 mL /1 bottle
9	Plate Seal	4 sheets

#### [References]

- 1) Matsunaga, K. *et al.*: *J. Cell. Sci.*, **130**, 541(2017)
- 2) Nishi, K. *et al.*: *Diabetes.*, **65**, 3015(2016)
- 3) Machida, M. *et al.*: *Biol. Pharm. Bull.*, **38**, 587(2015)

#### [Cross-reactivity]

Sample	Substance	Cross reaction(%)
Mouse	Proinsulin	100
	Insulin	—
	C-peptide	—
	Leptin	—
Rat	Proinsulin	100
	Insulin	—
	C-peptide	—
	Leptin	—
Human	Proinsulin	+
	Insulin	—
	C-peptide	—

Product Code	Maker No.	Product	Pack
636-23041	AKMPI-111	LBIS Mouse/Rat Proinsulin ELISA Kit	60 tests

## C-peptide ELISA Kit

C-peptide is released into the blood in approximately equimolar to insulin by the processing of proinsulin, a precursor of insulin. By the measurement of C-peptide concentration in the blood, it is possible to know the insulin secretory potency of pancreatic β cells in the case during insulin administration or insulin antibodies existing.

### C-peptide (U-type) series

This product is ELISA kit measurable specifically of C-peptide in the mouse or rat specimen.

#### [Performance]

- Assay range : 46.9~3,000 pg/mL
- Test Time : 5 hours
- Sample volume : 10 µL
- Samples : Mouse/Rat Serum, Plasma

#### [References]

Mouse(U-type) (AKRCP-031)

- 1) Motoyama, H. *et al.*: *PLoS One.*, **13**, e0197175(2018)
- 2) Joo, E. *et al.*: *Diabetes.*, **66**, 868(2017)

Rat(U-type) (AKRCP-030)

- 1) Park, JH. *et al.*: *J. Ethnopharmacol.*, **234**, 172(2019)
- 2) Park, C. *et al.*: *Phytother. Res.*, **32**, 2541(2018)
- 3) Niibo, M. *et al.*: *J. Dairy. Sci.*, **102**, 997(2018)

Product Code	Maker No.	Product	Pack
631-07231	AKRCP-031	RBIS Mouse C-peptide ELISA Kit (U-type)	96 tests
639-07271	AKRCP-030	RBIS Rat C-peptide ELISA Kit (U-type)	96 tests

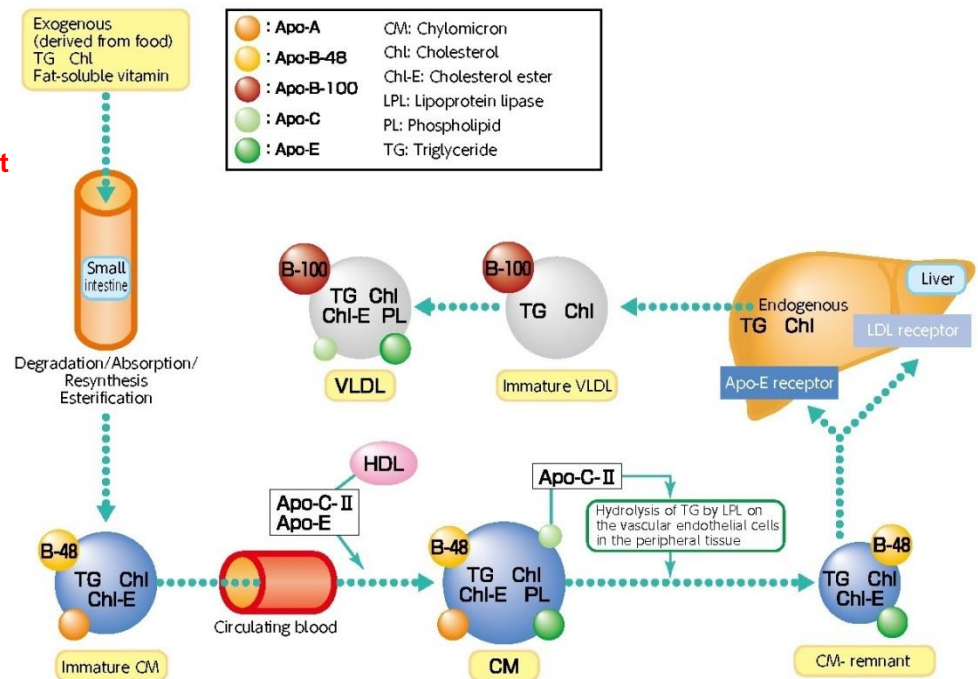
## Apolipoprotein B-48

Apolipoprotein B-48 is a specific structural protein in lipoproteins derived from the small intestine, such as chylomicron (CM) and chylomicron remnants. Since one role of CM is to transfer exogenous lipids derived from food to the liver or peripheral tissues, the measurement of Apo B-48 is considered a best marker for observation of exogenous lipid transportation after food intake.

### LBIS Human Apo B-48 ELISA Kit

#### [Performance]

- Assay range : 2.5 ~ 160 ng/mL
- Test Time : 2 hours 50 min
- Sample volume : 50 µL (diluted)
- Samples : Human Serum, Plasma



#### [References]

- 1) Blom, D. et al.: *J Clin Lipidol.*, **12**, 1234 (2018)
- 2) Drouin-Chartier, J. et al.: *J Lipid Res.*, **59**, 1501 (2018)
- 3) Bjornshave, A. et al.: *Eur J Nutr.*, **58**, 755 (2018)
- 4) Schioldan, A. et al.: *Eur J Nutr.*, **57**, 795 (2018)
- 5) Bjornshave, A. et al.: *Nutrients.*, **10**, E122 (2018)

#### [Kit Contents]

1	Anti-apoB-48 coated Plate	1 plate
2	Standard human apo B-48	1 vial
3	Buffer Solution	60 mL/1 bottle
4	Biotinylated Anti Apo B-48 Antibody Solution	100 µL/1 vial
5	HRP-conjugated Streptavidin	100 µL/1 vial
6	TMB Solution	12 mL/1 bottle
7	Stop Solution	12 mL/1 bottle
8	Wash Solution (x10)	100 mL/1 bottle
9	Plate Seal	4 sheets

Product Code	Maker No.	Product	Pack
637-10641	AKHB48	LBIS Human Apo B-48 ELISA Kit	96 tests

### LBIS Rabbit Apo B-48 ELISA Kit

#### [Performance]

- Assay range : 19.5 ~ 1250 ng/mL
- Test Time : 2 hours 50 min
- Sample volume : 50 µL (diluted)
- Samples : Rabbit Serum, Plasma

#### [Kit Contents]

1	Anti-apo B-48 coated Plate	1 plate
2	Standard rabbit apo B-48	1 vial
3	Buffer Solution	60 mL/1 bottle
4	Biotinylated Anti Apo B-48 Antibody	100 µL/1 vial
5	HRP-conjugated Streptavidin	100 µL/1 vial
6	TMB Solution	12 mL/1 bottle
7	Stop Solution	12 mL/1 bottle
8	Wash Solution (x10)	100 mL/1 bottle
9	Plate Seal	4 sheets

Product Code	Maker No.	Product	Pack
628-04901	AKRB48	LBIS Rabbit Apo B-48 ELISA Kit	96 tests



## Orexin A ELISA Kit

### Orexin A ELISA Kit Wako

Given that the level of orexin A in the cerebrospinal fluid is significantly decreased in patients with narcolepsy, a type of sleep disorder, orexin A is thought to play an important role in controlling sleep functions. The level of orexin A has been measured conventionally using radioimmunoassay. However, due to the need for radioisotopes (RI), the measurements could only be performed at dedicated institutions with proper equipment.

This product is an ELISA kit that enables simple measurements of orexin A from human cerebrospinal fluid, as well as rat cerebrospinal fluid, serum, and plasma without the need for radioisotope.

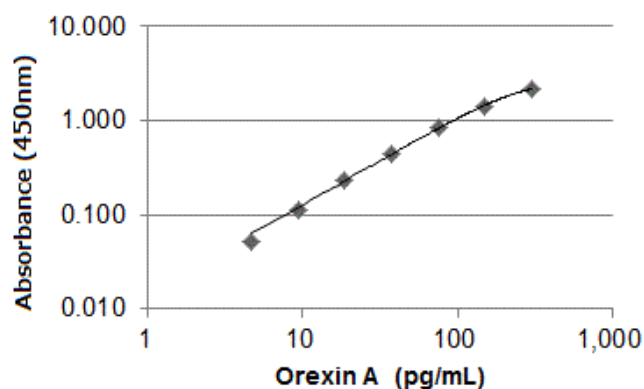
#### [Performance]

- Assay range : 4.69 ~ 300 pg/mL
- Test Time : About 20 hours
- Sample volume : 25  $\mu$ L
- Samples : human cerebrospinal fluid, rat cerebrospinal fluid, rat plasma, rat serum

#### [Reference]

Ono, T., *et al.*: *Psychiatry Clin Neurosci.*, **72**, 11, 849 (2018).

#### [Standard Curve]

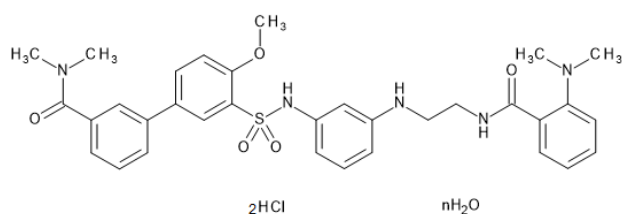


Product Code	Product	Grade	Pack
293-79801	Orexin A ELISA Kit Wako	for Immunochemistry	96 tests

### YNT-185 Dihydrochloride Hydrate

YNT-185-2HCl is non-peptide orexin receptor 2 (OX2R) agonist. Orexins are a family of neuropeptides, which are secreted by orexin-producing nerve present in the hypothalamus. There are two variants, orexin receptors exist as two types of receptors, type 1 and type 2. In particular, the orexin 2 receptor is involved in sleep-wake regulation, and orexin deficiency in the brain causes narcolepsy, a sleep disorder manifesting as an unbearable sleepiness during the day. Although it has been reported that intraventricular administration of orexin leads to symptom alleviation in narcolepsy mouse models, therapeutic effects cannot be expected unless it is administered into the brain, due to orexin being a peptide and being unable to pass through the blood-brain barrier. Intraventricular or intraperitoneal administration of YNT-185-2HCl has been shown to extend wake time, and has also been reported to improve the symptoms of narcolepsy mouse models.

#### [structural formula]



#### [References]

- 1) Nagahara, T., *et al.*: *J. Med. Chem.*, **58**, 7931 (2015).
- 2) Irukayama-Tomobe, Y., *et al.*: *Proc. Natl. Acad. Sci. USA*, **114**(22), 573(2017).
- 3) Toyama, S., *et al.*: *Anesthesiology*, **128**, 992 (2018).
- 4) Yamamoto, K., *et al.*: *Naunyn Schmiedeberg's Arch. Pharmacol.* (2019). doi: 10.1007/s00210-019-01646-x.

Product Code	Product	Grade	Pack
254-00641	YNT-185 Dihydrochloride Hydrate	for Cellbiology	5mg

## Albumin ELISA Kit

FUJIFILM Wako Shibayagi provides a unique lineup of ELISA kits for evaluation of urine, serum and plasma albumin for rat and mouse model organism. For high throughput analysis TIA reagents for the application on clinical chemistry auto-analyser are available.

### Albumin (Mouse, Rat) ELISA Kit

#### [Performance]

- Assay range : 50 ~ 1,000 ng/mL
- Test Time : 2 hours 20 min
- Sample volume : 5 µL(diluted)
- Samples : Mouse/Rat Serum, Plasma

#### [References]

##### Albumin Mouse ELISA Kit

- 1) Mizukami, K. *et al.*: *Naunyn. Schmiedebergs. Arch. Pharmacol.*, **391**, 1319(2018)
- 2) Rhee, H. *et al.*: *Kidney. Res. Clin. Pract.*, **37**, 222(2018)
- 3) Ishikawa, H. *et al.*: *Biosci. Biotechnol. Biochem.*, **82**, 515(2018)

##### Albumin Rat ELISA Kit

- 1) Kanno, M. *et al.*: *Nephrology.*, **23**, 1046(2018)
- 2) Ishibashi, Y. *et al.*: *Horm. Metab.*, **48**, 613(2016)
- 3) Takeshige, Y. *et al.*: *Hypertens.*, **39**, 415(2016)

Product Code	Maker No.	Product	Pack
634-04301	AKRAL-121	LBIS Mouse Albumin ELISA Kit	96 tests
631-04311	AKRAL-120	LBIS Rat Albumin ELISA Kit	96 tests

### Turbidimetric Immuno Assay Kit (TIA Kit)

#### [Performance]

- Assay range : 6.17 ~ 500 µg/mL
- Test Time : 10 min
- Sample volume : 6 µL
- Samples : Mouse/Rat Urine, Plasma

#### [References]

##### LBIS Mouse Urinary Albumin Assay Kit

- 1) Haku, S. *et al.*: *Biomed. Res. Int.*, **2018**, 2817045(2018)
- 2) Iwashita, Y. *et al.*: *Am. J. Physiol. Renal. Physiol.*, **310**, F1206(2016)
- 3) Zhu, K. *et al.*: *Free. Radic. Biol. Med.*, **83**, 21(2015)

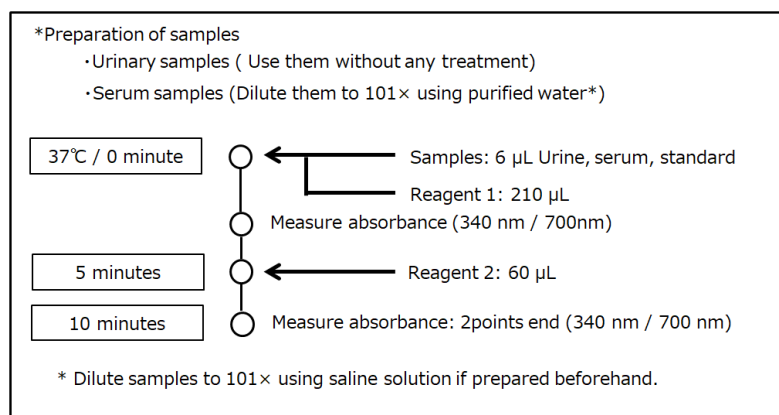
##### LBIS Rat Urinary Albumin Assay Kit

- 1) Tatsuyori, M. *et al.*: *Eur. J. Pharmacol.*, **756**, 85(2015)
- 2) Ruixia, M. *et al.*: *Int. J. Clin. Exp. Pathol.*, **8**, 14063(2015)
- 3) Sakai, M. *et al.*: *Eur. J. Pharmacol.*, **761**, 109(2015)

#### [Assay procedure]

For Hitachi 7180 auto-analyzer

\*Note that operation of auto-analyzer is different depending on the type of machines



Product Code	Maker No.	Product	Pack
638-25561	AKRAL-021S	LBIS Mouse Urinary Albumin Assay Kit (S-type)	60 tests
634-25301	AKRAL-020S	LBIS Rat Urinary Albumin Assay Kit (S-type)	60 tests

## LabAssay™ Series

The LabAssay™ Series is a collection of biochemical assay kits for analyzing samples from humans, mice, and other animals. Since analyses are performed in microtiter plates, many samples can be concurrently evaluated, and only small sample amounts are needed.

### LabAssay™ Overview

Code No.	Maker No.	Measuring factor	Animal species	Sample	Standard curve range	Sample amount	Measuring time	Pkg size
633-51761	LABNH3-M1	Ammonia nitrogen	Human, Mouse, Rat, Dog, Cat	Serum, Plasma, Culture supernatant	100~400 µg/dL	70µL	approx. 70 min	700 tests
633-51021	LABALP-M1	ALP		Serum, Plasma, Culture supernatant	0.0625~0.5 mmol/L	20µL	approx. 20 min	500 tests
635-50981	LABCHO-M1	Cholesterol		Serum, Plasma, Culture supernatant	50~592.2 mg/dL	2µL	approx. 10 min	500 tests
636-51011	LABCREA-M1	Creatinine		Serum, Plasma, Urine	2.5~10 mg/dL	50µL	approx. 40 min	500 tests
638-50971	LABGLUC-M1	Glucose		Serum, Plasma, Culture supernatant	50~500 mg/dL	2µL	approx. 10 min	500 tests
633-52001	LABNEFA-M1	NEFA		Serum, Plasma, Culture supernatant	0.5~1.97 mEq/L ※Oleic acid 1mEq=1mmol	4µL	approx. 20 min	500 tests
639-51001	LABPLIP-M1	Phospholipid		Serum, Plasma, Culture supernatant	150~596.1 mg/dL	2µL	approx. 10 min	500 tests
632-50991	LABTRIG-M1	Triglyceride		Serum, Plasma, Culture supernatant	100~888 mg/dL	2µL	approx. 10 min	350 tests

### LabAssay™ Ammonia

Ammonia is mainly produced in the intestine or the kidney. Ammonia produced in the body is converted to urea through a series of reactions known as the urea cycle in the liver and eliminated through urine.

#### Assay Principle (Modified Fujii-Okuda Method)

Ammonia is converted to Dioxydiphenylamine by the reaction of Phenol and Sodium Pentacyanonitrosyl ferrate(III). A reaction of the Dioxydiphenylamine with Sodium Hypochlorite produces Indophenol, which pigments blue, under alkaline conditions. LabAssay™ Ammonia is a kit used for the quantitative determination of ammonia nitrogen in samples by measuring absorbance of the blue color.

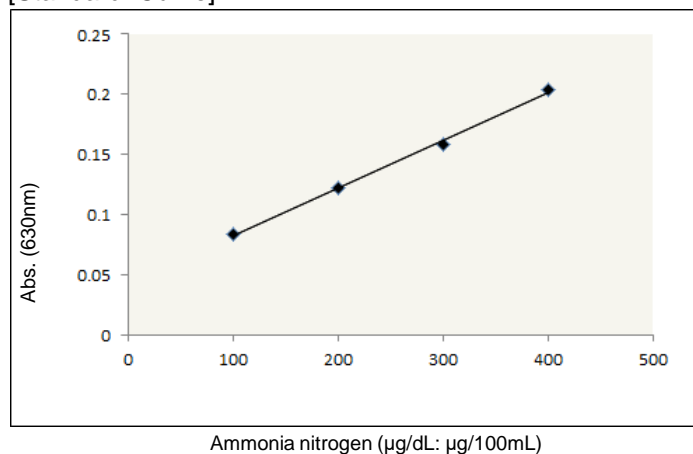
#### [Kit Contents]

1	Deproteinizing	100 mL×1vial
2	Chromogen Reagent A	50 mL×1vial
3	Chromogen Reagent B	25 mL×1vial
4	Chromogen Reagent C	50 mL×1vial
5	Ammonia Standard Solution	15 mL×1vial
6	Dilute olution for Standard	20 mL×1vial

#### [Performance]

- Standard curve range 100~400 µg/dL(µg/100mL)
- Measurement time approx. 70 minutes
- Amount of sample 70 µL
- Measurement wavelength 630 nm

#### [Standard Curve]



#### [Reference]

- 1) Inokuma, K. *et al.*: *Microb. Cell Fact.*, **17**, 153 (2018).

Code No.	Maker No.	Product name	Package size	Storage Condition
633-51761	LABNH3-M1	LabAssay™ Ammonia	700 tests	Keep at 2-10°C

## LabAssay™ Triglyceride

Triglycerides are neutral fats consisting of three fatty acids esterified to a glycerol backbone. There are triglycerides, cholesterol, phospholipids, free fatty acids and fat-soluble vitamins as lipid-soluble substances in the blood.

### Assay Principle

Triglycerides are converted to glycerol-3-phosphate by lipoprotein lipase and glycerolkinase. Hydrogen peroxide, which is produced by a reaction between the glycerol-3-phosphate and glycerol-3-phosphate oxidase(GPO), promotes oxidative condensation of *N*-ethyl-*N*-(2-hydroxy-3-sulfopropyl)-3,5-dimethoxyaniline sodium salt(DAOS) with 4-aminoantipyrine. LabAssay™ Triglyceride can be used to detect triglycerides concentration in samples by measuring absorbance of a blue color which is generated by the oxidative condensation reaction.

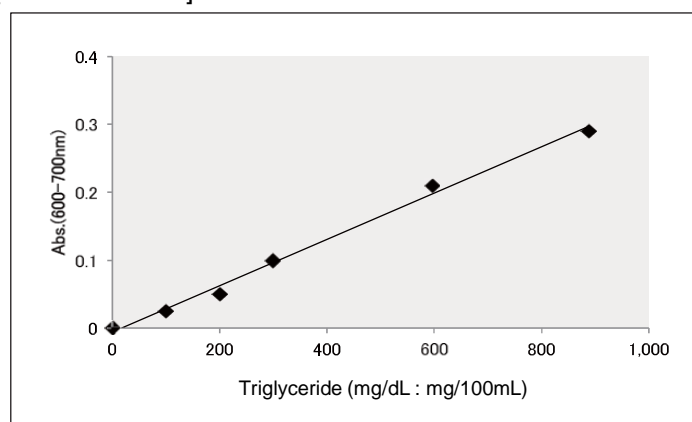
#### [Kit Contents]

1	Buffer	105 mL×3vials
2	Chromogen Substrate	for 105 mL×3vials
3	Standard Solution	10 mL×1vial

#### [Performance]

- Standard curve range 100~888 mg/dL(mg/100mL)
- Measurement time approx. 10 minutes
- Amount of sample 2  $\mu$ L
- Measurement wavelength 600 nm(Main), 700 nm(Sub)

#### [Standard Curve]



#### [References]

- 1) Gao, F. *et al.* : *Evid. Based Complement. Alternat. Med.*, **2015**, 801291(2015). ※Extraction liquid of rat kidney
- 2) Funakoshi, T. *et al.* : *Biochem. Biophys. Rep.*, **13**, 39(2018). ※Rat primary muscle satellite cell
- 3) Moser, V. A. and Pike, C. J. : *eNeuro*, **4**, e0077-17(2017). ※Mouse plasma
- 4) Fujii, N. *et al.* : *Aging Cell*, **16**, 508(2017). ※Rat plasma
- 5) Oh, T-W., *et al.* : *J. Exerc. Nutrition Biochem.*, **19**, 247(2015). ※Rat plasma
- 6) Fan, Y. *et al.* : *J. Biomed. Sci.*, **23**, 56(2016). ※Mouse serum

Code No.	Maker No.	Product name	Package size	Storage Condition
632-50991	LABTRIG-M1	LabAssay™ Triglyceride	350 tests	Keep at 2-10°C

## LabAssay™ Phospholipid

Phospholipids are known as not only as major component of cell membranes but also perform vital functions within the body such as emulsification and absorption of fats or coagulation of blood.

### Assay Principle (Choline Oxidase · DAOS method)

Phospholipids are hydrolyzed by Phospholipase D to release hydrogen peroxide. The formed hydrogen peroxide promotes oxidative condensation of *N*-ethyl-*N*-(2-hydroxy-3-sulfo-propyl)-3,5-dimethoxyaniline sodium salt (DAOS) with 4-aminoantipyrine. LabAssay™ Phospholipid is a kit to determine Phospholipid concentration in samples by measuring absorbance of a blue color which is generated by the oxidative condensation reaction.

#### [Kit Contents]

1	Buffer	50 mL×8vials
2	Chromogen Substrate	for 50 mL×8vials
3	Standard Solution	10 mL×2vials

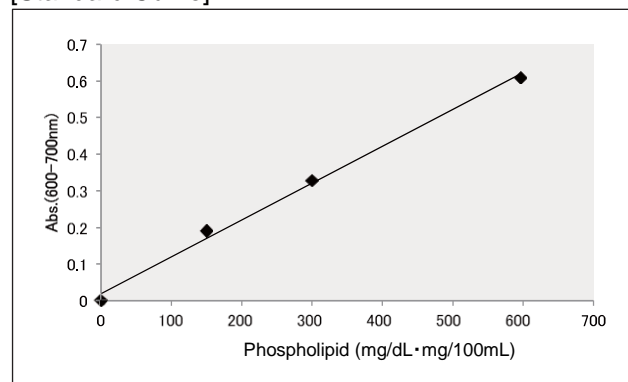
#### [Performance]

- Standard curve range 150~596.1 mg/dL(mg/100mL)
- Measurement time approx. 10 minutes
- Amount of sample 2 μL
- Measurement wavelength 600 nm(Main), 700 nm(Sub)

#### [References]

- 1) Tatematsu, Y. *et al.* : *Biol. Pharma. Bull.*, **41**, 319(2018). ※Liposome
- 2) Kuge, H. *et al.* : *J. Biol. Chem.*, **289**, 26783 (2014). ※Liposome
- 3) Kessler, E. C. *et al.* : *J. Dairy. Sci.*, **97**, 5481 (2014). ※Bovine
- 4) Xu, Q. *et al.* : *Biosci. Biotechnol. Biochem.*, **77**, 1390 (2013). ※Extraction liquid of mouse kidney

#### [Standard Curve]



Code No.	Maker No.	Product name	Package size	Storage Condition
639-51001	LABPLIP-M1	LabAssay™ Phospholipid	500 tests	Keep at 2-10°C

※Not available for sale in the US.

## LabAssay™ ALP

Alkaline Phosphatase (ALP) is an enzyme distributed in a variety of tissues such as the liver, bone and small intestines in animals. Especially, it is used one of the Osteogenesis Markers in bone metabolism research area.

### Assay principle (Alkaline Phosphatase activity assay with *p*-Nitrophenyl Phosphate as a substrate)

*p*-Nitrophenylphosphate is hydrolyzed into *p*-Nitrophenol in the presence of Alkaline Phosphatase(ALP). LabAssay™ ALP is a kit designed to determine Alkaline Phosphatase activity in samples by measuring the amount of *p*-Nitrophenol released by *p*-Nitrophenylphosphate as a phosphatase substrate.

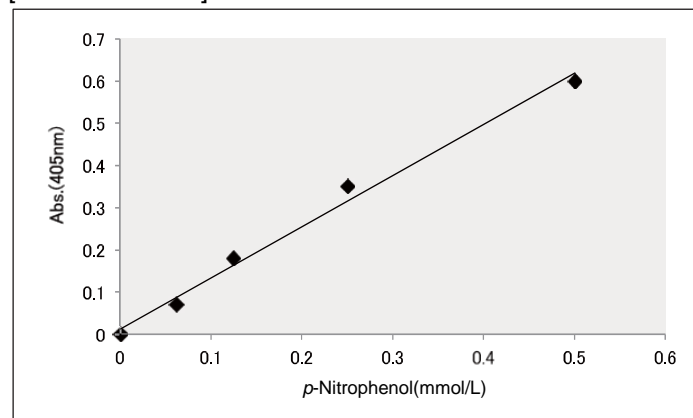
#### [Kit Contents]

1	Substrate Tablet	20 tablets
2	Buffer Solution	100 mL×1vial
3	Stop Solution	100 mL×1vial
4	Standard Solution	10 mL×1vial

#### [Performance]

- Standard curve range 0.0625~0.5 mmol/L
- Measurement time approx. 20 minutes
- Amount of sample 20 μL
- Measurement wavelength 405 nm

#### [Standard Curve]



#### [References]

- 1) Ito, S. *et al.* : *J. Pharmacol. Exp. Ther.*, **333**, 341(2010). ※Extraction liquid of mouse kidney
- 2) Matsuyama, A. *et al.* : *Clin. Exp. Pharmacol. Physiol.*, **45**, 75(2018). ※MC3T3-E1cell, C2C12cell
- 3) Chiba, T. *et al.* : *J. Atheroscler. Thromb.*, **23**, 1099(2016). ※Mouse plasma
- 4) Kohno, Y. *et al.* : *Stem Cell Res. Ther.*, **8**, 115(2017). ※Mesenchymal stem cell

Code No.	Maker No.	Product name	Package size	Storage Condition
633-51021	LABALP-M1	LabAssay™ ALP	500 tests	Keep at 2-10°C

## LabAssay™ Cholesterol

Cholesterol, a major component of cell membranes and the starting material in steroid synthesis in many animals, is a factor behind arteriosclerosis and other vascular diseases.

### Assay Principle (Cholesterol Oxidase · DAOS method)

Hydrogen peroxide produced by a reaction of cholesterol and cholesterol oxidase let *N*-Ethyl-*N*-(2-hydroxy-3-sulfopropyl)-3,5-dimethoxyaniline sodium salt (DAOS) and 4-Aminoantipyrin oxidize and condensate. LabAssay™ Cholesterol is a kit to determine total cholesterol by measuring absorbance of the blue color which is generated by the oxidative condensation reaction.

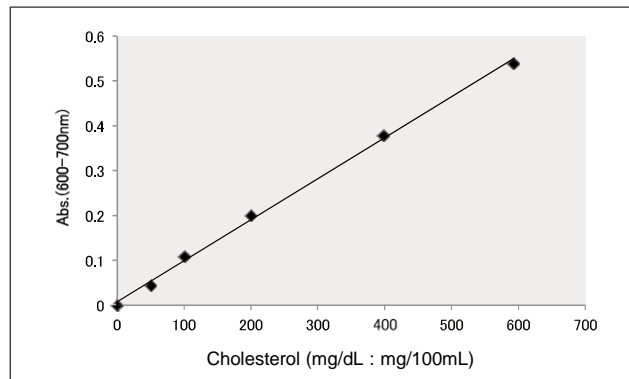
#### [Kit Contents]

1	Buffer	150 mL×2vials
2	Chromogen	150 mL×2vials
3	Standard Solution	10 mL×1vial

#### [Performance]

- Standard curve range 50~592.2 mg/dL(mg/100mL)
- Measurement time approx. 10 minutes
- Amount of sample 2  $\mu$ L
- Measurement wavelength 600 nm(Main), 700 nm(Sub)

#### [Standard Curve]



#### [References]

- 1) Kobayashi, Y. *et al.* : *J. Pharmacogn. Nat. Prod.*, online(2015) doi: 10.4172/2472-0992.1000113 ※Extraction liquid of mouse kidney
- 2) Gao, F. *et al.* : *Evid. Based Complement. Alternat. Med.*, **2015**, 801291(2015). ※Extraction liquid of rat kidney
- 3) Yoshioka, H. and Onosaka, S. : *Fundam. Toxicol. Sci.*, **3**, 151(2016). ※Mouse plasma
- 4) Fujii, N. *et al.* : *Aging Cell*, **16**, 508(2017). ※Rat plasma

Code No.	Maker No.	Product name	Package size	Storage Condition
635-50981	LABCHO-M1	LabAssay™ Cholesterol	500 tests	Keep at 2-10°C

※Not available for sale in the US.

## LabAssay™ NEFA

NEFA (Non-esterified fatty acid) in the blood is transported complexed with an albumin to peripheral tissues. They are important sources of fuel for the peripheral tissues. The concentration of NEFA in the blood is regulated by a release from the adipose tissues, a consumption in the peripheral tissues or a take up from the liver.

### Assay Principle (ACS · ACOD method)

NEFA (Non-esterified fatty acid) forms Acyl-CoA in the presence of Acyl-CoA synthetase(ACS). Hydrogen peroxide, which is produced by a reaction between the Acyl-CoA and Acyl-CoA oxidase(ACOD), promotes oxidative condensation of 3-methyl-*N*-ethyl-*N*-( $\beta$ -hydroxyethyl)-aniline (MEHA) with 4-aminoantipyrine. LabAssay™ NEFA can be used for the quantitative determination of NEFA in samples by measuring absorbance of a blue purple color which is generated by the oxidative condensation reaction.

#### [Kit Contents]

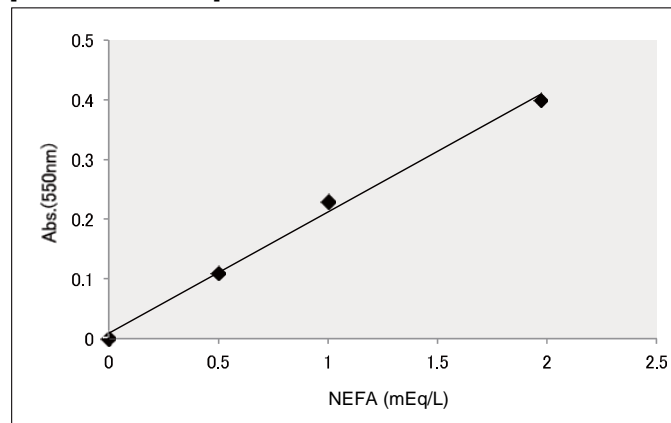
1	Chromogen Reagent A	for 10 mL×6vials
2	Solvent A	65 mL×1vial
3	Chromogen Reagent B	for 20 mL×6vials
4	Solvent B	130 mL×1vial
5	NEFA Standard Solution (Oleic acid 1 mEq/L)	10 mL×1vial

※Oleic acid 1mEq=1mmol

#### [Performance]

- Standard curve range 0.5~1.97 mEq/L
- Measurement time approx. 20 minutes
- Amount of sample 4  $\mu$ L
- Measurement wavelength 550 nm

#### [Standard Curve]



#### [References]

- 1) Kobayashi, Y. *et al.* : *J. Pharmacogn. Nat. Prod.*, online(2015) doi: 10.4172/2472-0992.1000113 ※Extraction liquid of mouse kidney
- 2) Gao, F. *et al.* : *Evid. Based Complement. Alternat. Med.*, **2015**, 801291(2015). ※Extraction liquid of rat kidney
- 3) Ogawa, K. *et al.* : *Reprod. Med. Biol.*, online(2018). doi.org/10.1002/rmb2.12084 ※Follicular fluid derived from pig vesicular ovarian follicle
- 4) Wang, F. *et al.* : *J. Mol. Endocrinol.*, **52**, 133 (2014). ※Mouse plasma

Code No.	Maker No.	Product name	Package size	Storage Condition
633-52001	LABNEFA-M1	LabAssay™ NEFA	500 tests	Keep at 2-10°C

※Not available for sale in the US and Europe.

## LabAssay™ Creatinine

Creatinine is a metabolite which is produced by creatinine phosphate directly or dehydration of creatinine in muscle and nerve. It is excreted from the body through kidney glomerular filtration.

### Assay Principle (Jaffé method)

LabAssay™ Creatinine can be used to measure the creatinine levels in samples by Jaffe's reaction where creatinine produces quantitatively an orange color with picric acid in alkaline condition.

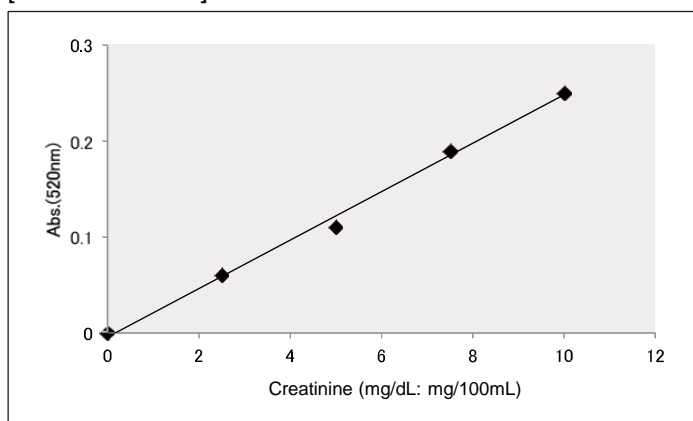
#### [Kit Contents]

1	Deproteinizing Reagent	150 mL×2vials
2	Picric Acid Reagent	for 150 mL×2vials
3	0.75mol/L Sodium Hydroxide Solution	10 mL×1vial
4	Standard Solution	10 mL×1vial

#### [Performance]

- Standard curve range 2.5~10 mg/dL(mg/100mL)
- Measurement time approx. 40 minutes
- Amount of sample 50 µL
- Measurement wavelength 520 nm

#### [Standard Curve]



#### [References]

- 1) Kawamoto, T. *et al.* : *Glycative Stress Res.*, **3**, 15(2016). ※Human urine
- 2) Guan, Y. *et al.* : *J. Pharmacol. Sci.*, **135**, 81(2017). ※Mouse urine, Mouse plasma
- 3) Ito, K. *et al.* : *Biol. Pharm. Bull.*, **38**, 1169(2015). ※Rat urine, Rat plasma
- 4) Tahara, Y. *et al.* : *Med. Chem. commun.*, **8**, 415(2017). ※Mouse serum

Code No.	Maker No.	Product name	Package size	Storage Condition
636-51011	LABCREA-M1	LabAssay™ Creatinine	500 tests	Keep at 2-10°C

※Not available for sale in Europe.

## LabAssay™ Glucose

Sugar is one of the most important sources of energy in biology. It is regulated by various factors within an organism. Glucose converges to a stable ratio of α-form and β-form in solutions.

### Assay Principle (Mutarotase • GOD method)

α-D-Glucose is converted to β-D-Glucose by mutarotase. Hydrogen peroxide, which is produced by a reaction between β-D-Glucose and glucose oxidase(GOD), promotes oxidative condensation of phenol with 4-aminoantipyrine quantitatively. LabAssay™ Glucose is a kit used for the quantitative determination of glucose concentrations in samples by measuring absorbance of a red color which is generated by the oxidative condensation reaction.

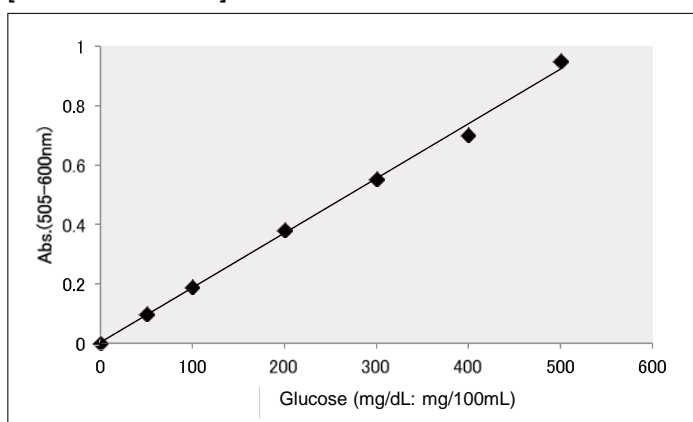
#### [Kit Contents]

1	Buffer	150 mL×2vial
2	Chromogen Reagent	for 150 mL×2vials
3	Glucose Standard I	10 mL×1vial
4	Glucose Standard II	10 mL×1vial

#### [Performance]

- Standard curve range 2.5~10 mg/dL(mg/100mL)
- Measurement time approx. 40 minutes
- Amount of sample 50 µL
- Measurement wavelength 505 nm(Main), 600 nm(Sub)

#### [Standard Curve]



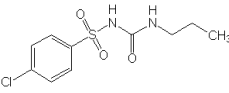
#### [References]

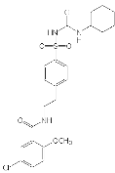
- 1) Yamashita, Y. *et al.* : *Biosci. Biotechnol. Biochem.*, **77**, 888 (2013). ※Mouse plasma
- 2) Narita, T. *et al.* : *Exp. Gerontol.*, **104**, 127(2018). ※Rat plasma
- 3) Yamasaki, M. *et al.* : *Food Sci. Technol. Res.*, **21**, 827(2015). ※Mouse serum
- 4) Fan, Y. *et al.* : *J. Biomed. Sci.*, **23**, 56(2016). ※Mouse serum

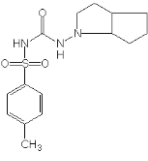
Code No.	Maker No.	Product name	Package size	Storage Condition
638-50971	LABGLUC-M1	LabAssay™ Glucose	500 tests	Keep at 2-10°C

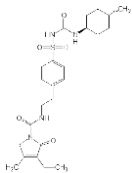
## Compounds for Research of Diabetes

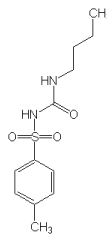
### -Sulfonylureas compounds-

Product name	Wako Code	Package Size
<b>Chlorpropamide</b> for Pharmacology Research	032-21482	25g
	CAS No. 94-20-2 $C_{10}H_{13}ClN_2O_3S=276.74$ <a href="#">[Specification Assay]</a> 97.0+% (HPLC) <a href="#">[Solubility]</a> Methanol <a href="#">[Overview]</a> Sulfonylurea (SU) compounds act by enhancing insulin release from the $\beta$ -islet cells of the pancreas.	

Product name	Wako Code	Package Size
<b>Glibenclamide</b> for Biochemistry	078-03881	5g
	076-03882	25g
	CAS No. 10238-21-8 $C_{23}H_{28}ClN_3O_3S=494.00$ <a href="#">[Specification Assay]</a> 98.0+% (Titration) <a href="#">[Solubility]</a> <i>N,N</i> -Dimethylformamide <a href="#">[Overview]</a> Sulfonylurea (SU) compounds act by enhancing insulin release from the $\beta$ -islet cells of the pancreas.	

Product name	Wako Code	Package Size
<b>Gliclazide</b> for Biochemistry	071-04731	10g
	CAS No. 21187-98-4 $C_{15}H_{21}N_3O_3S=323.41$ <a href="#">[Specification Assay]</a> 98.0+% (Titration) <a href="#">[Solubility]</a> <i>N,N</i> -Dimethylformamide <a href="#">[Overview]</a> The pharmacological actions of this product known as sulfonylurea (SU) include the action on the islands of Langerhans. 1) Insulin secretion stimulation, 2) somatostatin secretion stimulation, and 3) glucagon secretion inhibition, etc. have been reported.	

Product name	Wako Code	Package Size
<b>Glimepiride</b> for Pharmacology Research	071-05691	500mg
	077-05693	5g
	CAS No. 93479-97-1 $C_{24}H_{34}N_4O_5S=490.62$ <a href="#">[Specification Assay]</a> 97.0+% (HPLC) <a href="#">[Solubility]</a> DMSO <a href="#">[Overview]</a> Sulfonylurea (SU) compounds act by enhancing insulin release from the $\beta$ -islet cells of the pancreas.	

Product name	Wako Code	Package Size
<b>Tolbutamide</b> for Biochemistry	209-09172	25g
	CAS No. 64-77-7 $CH_3C_6H_4SO_2NHCONHCH_2CH_2CH_2CH_3=270.35$ <a href="#">[Specification Assay]</a> 99.0+% (Titration) <a href="#">[Solubility]</a> Ethanol <a href="#">[Overview]</a> The pharmacological actions of this product known as sulfonylurea (SU) include the action on the islands of Langerhans. 1) Insulin secretion stimulation, 2) somatostatin secretion stimulation, and 3) glucagon secretion inhibition, etc. have been reported.	

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