Instruction For Use

【Product Name】

IGFBP-3 (eCLIA)

【Order Information】

REF NO.	Package Size
0320509501	50 T
0320509502	2×50 T
0320509503	100 T
0320509504	2×100 T

【Intended Use】

Immunoassay for the in vitro quantitative determination of insulin-like growth factor binding protein 3 (IGFBP-3) in human serum and plasma. Determination of IGFBP-3 is used for auxiliary diagnosis of growth disorders and premature rupture of membranes.

【Summary】

IGFBP-3 is one of six structurally similar proteins in the insulin-like growth factor (IGF) binding protein family[1]. It is a peptide chain composed of 264 amino acids with molecular weight of 29kD, which is the most abundant IGFBP in circulatory system[2]. About 80% of IGF-1 in the circulatory system binds to IGFBP-3 to form a ternary complex[3], and increases the half-life of IGF-1 from 10 minutes to 12 hours[4]. In contrast to the secretion of growth hormone (GH), which reaches its peak pulse every 60-90 minutes, serum levels of IGFBP-3 remain basically unchanged day and night. The secretion of IGFBP-3 increases before puberty and declines slightly throughout adulthood[5-6]. The effect of IGFBP-3 on the bioavailability of IGF-1 in the circulatory system makes IGFBP-3 a marker for the diagnosis of growth disorders, can be used as a substitute for or in combination with IGF-1 concentration in the diagnosis of growth hormone disorders, especially its superior performance in young children[7].

【Test Principle】

Sandwich principle. Total duration of assay: 18 minutes.

10 μL of pre-diluted sample, biotinylated IGFBP-3 antibodies and IGFBP-3 antibodies labeled with ruthenium complex react to form a sandwich complex. After addition of streptavidin-coated microparticles, the complex becomes bound to the solid phase via interaction of biotin and streptavidin. The reaction mixture is aspirated into the measuring cell where the microparticles are magnetically captured onto the surface of the electrode. Unbound substances are then removed with system reagent. Application of a voltage to the electrode then induces chemiluminescent emission which is measured by a photomultiplier. Results are determined automatically by the software by comparing the electrochemiluminescence signal obtained from the reaction product of the sample with the signal of the cutoff value previously obtained by calibration.

【Main Components】

The reagent pack consists of MB, RA, RB, DS, calibrators and control materials (optional). Different lots cannot be used at the same time or mixed up together.

Components	Ingredients	Volume (2×50T)	Volume (50T)	Volume (100T)	Volume (2×100T)
(MB)	Streptavidin-coated microparticles, 0.45mg/mL; 0.1M PBS, ProClin™ 300	2×1.8mL	1×1.8mL	1×3.5mL	2×3.5mL
(RB)	Biotinylated monoclonal IGFBP-3 antibodies, 1mg/L; 0.1 M PBS; ProClin™ 300	2×3.5mL	1×3.5mL	1×7.0mL	2×7.0mL
(RA)	IGFBP-3 antibodies labeled with ruthenium, 1mg/L; 0.1 M PBS;ProClin™ 300	2×3.5mL	1×3.5mL	1×7.0mL	2×7.0mL
(DS)	Sample diluent; 0.1 M PBS; ProClin™ 300	2×4.5mL	1×4.5mL	1×9.0mL	2×9.0mL
Calibrators	IGFBP-3 antigen; 0.05 M PBS; ProClin™ 300	High: 1×1.0 mL Low: 1×1.0 mL			
Control Materials (Optional)	IGFBP-3 antigen; 0.05 M PBS; ProClin™ 300	High: 1×1.0 mL Low: 1×1.0 mL			

The calibration process of this kit is traceable to the manufacturer's selected measurement procedure.

See the control material value sheet for the target values and ranges of control materials.

Supporting instruments and materials required but not provided in this pack (provided by Lifotronic)

Additional materials for Automated ECL Immunoassay Analyzer eCL8000, eCL8000i, eCL8000p, eCL8000x:

- REF 679005, Auffer, 480 mL, or REF 679004, Auffer, 6×480 mL
- REF 679007, Buffer, 480 mL, or REF 679006, Buffer, 6×480 mL
- REF 679009, Concentrated Washing Buffer, 1 L, or REF 679008, Concentrated Washing Buffer, 6×1 L
- REF 679011, Assay Cup, 300 T, or REF 679012, Assay Cup, 3000 T

Additional materials for Automated ECL Immunoassay Analyzer eCL8600, eCL8600i, eCL8600p, eCL8800, eCL8800i, eCL8800p:

- REF 0320501804, Auffer, 2×1 L, or REF 0320501805, Auffer, 4×1 L
- REF 0320501904, Buffer, 2×1 L, or REF 0320501905, Buffer, 4×1 L
- REF 0320507502, PreClean, 2×800 mL, or REF 0320507503, PreClean, 4×800 mL
- REF 0320510001, Assay Cup/Assay Tip, 6×6×105, or REF 032120111, Assay Cup/Assay Tip, 12×2×105

Additional materials for Automated ECL Immunoassay Analyzer eCL9000,

- REF 0320501801, Auffer, 2×2 L, or REF 0320501806, Auffer, 4×2 L
- REF 0320501901, Buffer, 2×2 L, or REF 0320501906, Buffer, 4×2 L
- REF 0320507501, PreClean, 2×2 L, or REF 0320507504, PreClean, 4×2 L
- REF 0320510001, Assay Cup/Assay Tip, 6×6×105, or REF 0320510002, Assay Cup/Assay Tip, 1×6×105

【Storage and Shelf Life】

Store at 2ºC-8°C.

Do not freeze.

Store the reagent kit upright in order to ensure complete availability of the microparticles during automatic mixing prior to use.

Damaged, expired or contaminated reagents should be discarded.

Stability of the reagents	
Unopened at 2~8°C	18 months
Store at 2~8°C after opening	8 weeks
Stored on the analyzers at 2~15°C	8 weeks

The calibrators are stable up to the stated expiration date.

Stability of the calibrators and Control Materials	
Unopened at 2~8°C	18 months
Store at 2~8°C after opening	8 weeks
Stored on the analyzers at 18~28°C	8 hours

Store calibrators and control materials upright in order to prevent the calibrators and control materials solution from adhering to the cap of the vial.

【Applicable Instrument】

Automated ECL Immunoassay Analyzers: eCL8000, eCL8000i, eCL8000p, eCL8000x, eCL8600, eCL8600i, eCL8600p, eCL8800, eCL8800i, eCL8800p, eCL9000, eCL9600, eCL9900, eCL9900i.

【Specimen collection, handling and storage】

It is recommended to use human serum samples or plasma samples collected with EDTA-K3, EDTA-K2, heparin lithium blood collection tubes.

Blood samples should be collected in accordance with the standard operation of venipuncture. After the sample is completely coagulated, centrifugation should be performed to remove residual cellular substances. The sample should be free of air bubbles during testing. Lipid layer covering the sample after centrifugation should be removed. It is not recommended to use hemolyzed samples.

Samples can be stored for 8 hours at room temperature (18~28ºC), 48 hours at 2~8ºC, and 8 months at -15ºC or below. Freezing and thawing can be performed once.

【Assay Procedure】

Testing procedures and precautions

Before testing, the system operation manual of the measuring instrument should be carefully read, so as to obtain relevant information such as system operating procedures, sample management, safety precautions and maintenance, and materials required for testing should be prepared. IGFBP-3 testing procedures should be called and set up in accordance with the system operating procedures.

Before using the reagent, put it into the analyzer 30 minutes in advance to automatically stir the magnetic bead particles and keep them in suspension.

Recommended environment temperature for testing: 10~30ºC; relative humidity: ≤80%.

Calibration

Calibration should be performed using lot-matching reagent and calibrators.

Before calibration, the reagent and main curve information should be imported into the analyzer via radio frequency identification reagent card (refer to instrument user manual). The analyzer adjusts the main curve to produce working curve according to the calibrator results, and identifies validity of the working curve automatically.

Recalibration is recommended when:

(1) The reagents of different lot are used;

(2) The same lot of reagents were used on the analyzer beyond 4 weeks;

(3) Quality control findings outside the defined limits.

(4) The Buffer of different lots are used.

Quality control

For quality control, use IGFBP-3 Control Materials.

In addition, other suitable control material can be used.

Control materials for the various concentration ranges should be run individually at least once every 24 hours when the test is in use, once per reagent kit, and following each calibration.

The control intervals and limits should be adapted to each laboratory's individual requirements. Values obtained should fall within the defined limits. Each laboratory should establish corrective measures to be taken if values fall outside the defined limits.

If necessary, repeat the measurement of the samples concerned.

Follow the applicable government regulations and local guidelines for quality control.

Please make sure that the correct values are used.

Calculation

The system software automatically calculates the analyte concentration using particular algorithm, and the result unit is μg/mL, ng/mL, nmol/L.

Conversion factors: μg/mL × 1000 = ng/mL

ng/mL × 0.001 = μg/mL

ng/mL × 0.036 = nmol/L

【Biological reference interval】

By analyzing the serum samples of healthy population from hospitals in Guangdong province, the calculation of reference interval is shown in the table below:

Age	Percentiles	IGFBP-3 (μg/mL)
1 ~ 6	2.5%-97.5%	0.731 ~ 5.204
7 ~ 10	2.5%-97.5%	1.516 ~ 7.102
11 ~ 17	2.5%-97.5%	2.834 ~ 9.082
18 ~ 64	2.5%-97.5%	3.131 ~ 7.214
65 ~ 80	2.5%-97.5%	2.722 ~ 5.563

Due to the differences in geography, race, gender and age, it is recommended that each laboratory determine the applicability of reference range through tests, and establish the reference range of this laboratory if necessary.

【Interpretation of results】

When interpreting the test results, it is necessary to refer to the patient's overall clinical situation, including: symptoms, medical history as well as other corresponding data and information.

【Limitations】

The test results are only for clinical reference and cannot be used alone as the basis for diagnosis or exclusion of cases.

The detection range of the kit is 0.035 ~ 18 μg/mL. If the IGFBP-3 concentration in the sample is lower than the lower limit of detection, the result is reported as <0.035 μg/mL; if the IGFBP-3 concentration in the sample is higher than the upper limit of detection, the result is reported as >18 μg/mL.

When jaundice (bilirubin) is ≤ 66 mg/dL, hemolysis (hemoglobin) is ≤ 1000 mg/dL, lipemia (triglyceride) is ≤ 2000 mg/dL, biotin is ≤ 20 ng/mL, total protein is ≤ 7 g/dL, the interference deviation of the measured results is within ±10%. When the concentration of rheumatoid factor in the sample is ≤ 1200 IU/mL, the relative recovery of the test results is between 90% and 110%.

When the IGFBP-3 concentration reaches 500 μg/mL, there is no high-dose hook effect.

【Analytical Performance】

Lower limit of measurement

Limit of Blank = 0.035 μg/mL.

Limit of Detection = 0.07 μg/mL.

Accuracy

The relative deviation shall not exceed ±10%.

Linearity

The correlation coefficient is not less than 0.9900 in the interval of 0.07 ~ 18 μg/mL.

Within-run precision (repeatability)

The coefficient of variation (CV) is less than or equal to 8.0%.

Between-lot precision

The coefficient of variation (CV) is less than or equal to 10.0%.

Homogeneity of calibrators and control materials

Within-bottle homogeneity: The coefficient of variation (CV) is less than or equal to 8.0%.

Accuracy of calibrators

The relative deviation shall not exceed ±10%.

Measured values of control materials

The measured results of supporting assigned quality control of the kit should be within the quality control range.

Method comparison

A comparison of the Lifotronic IGFBP-3 assay (y) with the commercial IGFBP-3 reagent kit (x) using clinical samples gave the following correlations:

Number of plasma samples measured: 118

Linear regression:

y=1.036x+0.1837

r = 0.984

The sample concentrations were between 0.71 and 14.13 μg/mL.

【Precaution and Warning】

The kit is only used for in vitro diagnostics.

Exercise the normal precautions required for handling all laboratory reagents.

All reagents and samples including specimen, reagents, calibrators and control materials should avoid foaming before and during test.

Disposal of all waste material should be in accordance with local guidelines.

Safety data sheet available for professional user on request.

This product contains animal-sourced materials and may have potential biological risk.All samples and test wastes should be treated as the source of infection, and all wastes must be disposed according to local regulations.

Any serious incident that would be occurred in relation to the device shall be reported to the manufacturer and the competent authority of the Member State in which the user and/or the patient is established.

The preservative ProClin™300 which contain Mixture of 5-Chloro-2-methyl-4-isothiazolin-3-one and 2-Methyl-2H-isothiazol-3-one (3:1): May cause an allergic skin reaction. thus, proper personal protection should be adopt while handling the reagent: avoid breathing dust/fume/gas/mist/vapours/ spray, wear protective gloves and contaminated work clothing should not be allowed out of the workplace. If skin irritation or rash occurs: get medical advice/attention, take off contaminated clothing and wash it before reuse, and dispose of contents/container to an approved waste disposal plant.

【Literature References】

1. Forbes BE, McCarthy P, Norton RS. Insulin-like growth factor binding proteins: a structural perspective. Front Endo 2012;3:1-13.
2. Rank MB. Insulin-like growth factor binding-protein-3 (IGFBP-3). Best Pract Res Clin Endocrinol Metab 2015;29:701-711.
3. Baxter RC, Martin JL, Beniac VA. High Molecular Weight Insulin-like Growth Factor Binding Protein Complex. J Biol Chem 1989;264(20):11843-11848.
4. Frysak Z, Schovanek J, Iacobone M, et al. Insulin-like Growth Factors in a Olomouc Czech Rep 2015;159(3):347-351.
5. Friedrich N, Wolthers OD, Arafat AM, et al. Age- and Sex- Specific Reference Intervals Across Life Span for Insulin-Like Growth Factor Binding Protein 3 (IGFBP-3) and the IGF-1 to IGFBP-3 Ratio Measured by New Automated Chemiluminescence Assays. J Clin Endocrinol Metab 2014;99:1675-1686.
6. Ketha H, Singh RJ. Clinical assays for quantitation of insulin-like-growth-factor-1(IGF-1). Methods 2015;81:93-98.
7. Wit JM, Clayton PE, Rogol AD, et al. Idiopathic short stature: Definition, epidemiology, and diagnostic evaluation. Growth Horm IGF Res 2008;18:89-110.

【Symbols Explanation】

Symbol	Title of Symbol	Symbol	Title of Symbol
	Manufacturer		Consult instructions for use
	Use-by date		In vitro diagnostic medical device
	Batch code		Sufficient for <n> tests
	Serial number		Biological risks
	Temperature limit		This way up
	Authorized representative in the European Community		Indicates this device is in compliance with Europe Directive.
	Catalogue number	P/N	Material code
	Warning		Date of manufacture
	Unique device identifier		

【Manufacturer】

Shenzhen Lifotronic Technology Co., Ltd.

Lifotronic Tower, No.8, Qiuzhi East Road, Guancheng Community, Guanhu Street, Longhua, 518110 Shenzhen, PEOPLE'S REPUBLIC OF CHINA

E-mail: inter-service@lifotronic.com

【European Representative】

Umedwings Netherlands B.V.

Treubstraat 1, 2288EG, Rijswijk, The Netherlands

Tel: +31(0) 642758955

E-mail: ar@umedwings.eu

【Version and Revision】

Version: 2.0

Issue Date: 2025-03-04