Lifotronic

CE

# Instruction for Use

**【Product Name】**

Carbohydrate Antigen 19-9 (eCLIA)

**【Order Information】**

| REF NO. | Package Size |
|---|---|
| 0320500801 | 50 T |
| 0320500802 | 2×50 T |
| 0320500803 | 100 T |
| 0320500804 | 2×100 T |

**【Intended Purpose】**

Carbohydrate Antigen 19-9 (eCLIA) is an immunoassay reagent for in vitro quantitative determination of Carbohydrate Antigen 19-9 (CA19-9) in human serum or plasma by fully automated immunassay analyzer monitor the therapeutic effect of pancreatic and other digestive tract malignant tumors.

**【Summary】**

Screening: Serum CA19-9 is generally not used for screening pancreatic cancer;

Auxiliary diagnosis: it is used for the auxiliary diagnosis of malignant tumors such as pancreas and bile duct, but the specificity is not strong enough. The measured value of CA19-9 has no relationship with the size of pancreatic cancer, but when it is up to 10000 U/mL, there is almost peripheral metastasis[1]. Serum CA19-9 was also certain positive in gastric cancer, colon cancer and liver cancer. The serum levels of CA19-9 and cholangitis are different from those of benign liver cirrhosis and cholangitis[2-4]. 3% to 7% of the patients have Lewis antigen negative blood group structure and do not express CA19-9. Therefore, CA19-9 test results of these patients are often negative[5].

Prognosis evaluation: Serum CA19-9 combined with clinical data can be used as a comprehensive prognostic indicator for pancreatic cancer.

Efficacy and recurrence monitoring: Serum CA19-9, together with imaging examination, can be used to monitor the therapeutic effect of radiotherapy and chemotherapy for pancreatic cancer. The continuous increase of CA19-9 concentration indicates disease progression[6-7]. Serum CA19-9, together with imaging examination, can be used for follow-up and recurrence monitoring of pancreatic cancer after surgical resection. The patients were followed up after the operation every 3 months i the first year, every 6 months in the second to third years, and once a year after three years.

For professionals use only.

**【Principle】**

The Carbohydrate Antigen 19-9 (CA19-9) Assay Kit adopts the double-site sandwich electrochemiluminescence method. CA19-9 in the sample, biotin labeled CA19-9 antibody and the ruthenium (Ru) complex-labeled CA19-9 antibody form an antigen-antibody sandwich complex, which is bound to streptavidin coated magnetic particles, and then transferred to the measuring cell where the magnetic particles are captured onto the surface of the electrode, while the unbound substances are washed away. Chemiluminescence is generated after the electrode is electrified, and the generated optical signal is measured by a photomultiplier, processed by an instrument, and the concentration of CA19-9 in the sample is calculated based on the calibration curve.

**【Composition】**

The reagent pack consists of MB, RA, RB, calibrators and control materials (optional), and different components and reagents of lot numbers should not be used interchangeably.

| Components | Ingredients | Content (2×50 T) | Content (50 T) | Content (100 T) | Content (2×100 T) |
|---|---|---|---|---|---|
| Magnetic Beads (MB) | Streptavidin coated magnetic particles, 0.45 mg/mL; 0.1 M phosphate-buffered saline (PBS); ProClin300 | 2×1.8 mL | 1×1.8 mL | 1×3.5 mL | 2×3.5 mL |
| Reagent B (RB) | Biotinylated CA19-9 antibody, 3.0 mg/L; 50 mM HEPES; ProClin300 | 2×3.8 mL | 1×3.8 mL | 1×7.5 mL | 2×7.5 mL |
| Reagent A (RA) | Ru complex-labeled CA19-9 antibody, 1.5 mg/L; 50 mM HEPES; ProClin300 | 2×3.8 mL | 1×3.8 mL | 1×7.5 mL | 2×7.5 mL |
| CA19-9 Calibrator | CA19-9 antigen, 100 mM PBS pH7.4, ProClin 300 | High: 2×1.0 mL Low: 2×1.0 mL | High: 1×1.0 mL Low: 1×1.0 mL | | |
| CA19-9 Control Material (Optional) | CA19-9 antigen, 100 mM PBS pH7.4, ProClin 300 | High: 2×1.0 mL Low: 2×1.0 mL | High: 1×1.0 mL Low: 1×1.0 mL | | |

CA19-9 Control Material RFID: A radio-frequency identification card that stores lot-specific control material target values and ranges.

The assignment process of supporting calibrators in this pack is strictly implemented with reference to ISO 17511:2020, which can be traced to the Roche ELecsys CA19-9.

Refer to the quality control card for the target value and range of the quality controls.

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

**【Instruments and Materials Required but Not Provided】**

What for Automated ECL Immunoassay Analyzer eCL8000, eCL8000i, eCL8000p, eCL8000x::

- Auffer 480 mL, 6×480 mL
- Buffer 480 mL, 6×480 mL
- Concentrated Washing Buffer
- Assay Cup

What for Automated ECL Immunoassay Analyzer eCL9000, eCL9000i, eCL9600, eCL9900, eCL9900i:

- Auffer 2 L
- Buffer 2 L
- Concentrated Washing Buffer
- Assay cup, reaction cup
- Disposable Sampling Head, pipette tips
- PreClean, system wash solution
- Waste Bags, litter bags

**【Applicable Instrument】**

Automated ECL Immunoassay Analyzer: eCL8000, eCL8000i, eCL8000p, eCL8000x, eCL9000, eCL9000i，eCL9600, eCL9900, eCL9900i

**【Storage and Shelf life】**

Damaged, expired or contaminated reagents should be discarded.

The kit should be stored at

| Stability | |
|---|---|
| Unopened at 2~8ºC | 18 months |
| Stored at 2~8ºC after opening | 56 days |
| Stored onboard | 56 days |

**【Specimen collection, handling and storage】**

It is recommended to use human serum samples or plasma samples collected with EDTA-K2, EDTA-K3, 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 floating on the upper of the sample should be removed. It is not recommended to use hemolyzed samples.

Samples can be stored for 3 days at room temperature (18~28ºC), 8 days at 2~8ºC, and 3 months at -15ºC or below. Samples should avoid repeated freeze-thaw cycles and samples can only be freeze-thawed three times.

**【Testing Procedure】**

**Testing procedure 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. CA19-9 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%.

The CA19-9 test adopts the double-site sandwich electrochemiluminescence method, with the total test time of 9 minutes, and the test method is as follows:

Step 1: After the user applies for testing, the system automatically aspirates 75 μL of biotinylated CA19-9 antibody, 75 μL of Ru complex-labeled CA19-9 antibody, 35 μL of streptavidin coated magnetic particles and 10 μL of sample into the reaction cup. They are automatically incubated at 37ºC for 9 minutes to form antigen-antibody sandwich complexes, and then the whole complexes are bound to the magnetic particles under the interaction of biotin and streptavidin.

Step 2: After incubation, the system automatically aspirates the reaction mixture into the measuring cell, the magnetic particles are captured onto the surface of electrode, while the unbound substances are washed away by buffer, and the electrodes is applied with voltage to generate chemiluminescence. The generated optical signals are measured by the photomultiplier, and the measured results are automatically determined via the calibration curve specifically generated by the instrument (this curve is obtained by performing two-point calibration for the master calibration curve obtained by reading the reagent RFID).

**Calibration**

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

The target value of the calibrator has been written into the Radio-Frequency Identification card (RFID card) of the kit.

1. Before calibration, the target value, reagent information and master calibration curve information of the calibrator in the RFID card (Radio Frequency Identification, inductive electronic chip or proximity card) of the kit should be imported into the test system by swiping the card.

2. The supporting calibrator is tested, and the analyzer adjusts the master calibration curve according to the test results of the supporting calibrator to obtain the calibration curve tested by the current system (the analyzer can automatically interpret the validity of the calibration curve according to the adjustment results).

The test system should re-perform the calibration operation under the following conditions:

(1) When different lots of reagents are used;

(2) When the same lot of reagents has been used on the analyzer for more than 28 days;

(3) if the quality control result exceeds the defined limit;
(4) When changing the buffers of different lot numbers.

**Quality Control procedure**

In order to ensure the reliability of test results, it is recommended to test the control materials every 24 hours. It is recommended to test the control materials after each calibration, reagent lot replacement, maintenance or troubleshooting. The quality control results should all fall within the defined range. If they exceed the defined range, the reasons such as instrument status, reagents and calibrators should be investigated and the corrective measures should be taken.

**Calculation**

The system software can automatically calculate the analyte concentration, with the result in U/mL.

**Specimen dilution**

CA19-9 concentration in the sample higher than the upper limit of detection can be diluted with sample diluent.

The recommended dilution ratio is 1:10 (automatic dilution by instrument or manual dilution). If manual dilution, the result should be multiplied by the dilution ratio. If instrument automatic dilution, the instrument will automatically calculate the result.

**【Reference intervial】**

By analyzing the serum samples of healthy people from hospitals in Guangdong, it was calculated that the upper limit of the reference range of 95% is 27.4 U/mL.

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.

**【Limitations】**

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

(2) The detection range of the kit is 0.25~1000 U/mL. If the CA19-9 concentration in the sample is lower than the lower limit of detection, the result is reported as < 0.25 U/mL; if the Ca19-9 concentration in the sample is higher than the upper limit of detection, the result is reported as > 1000 U/mL (10× diluted sample is reported as > 10000 U/mL).

(3) When jaundice (bilirubin) is ≤ 66 mg/dL, hemolysis (hemoglobin) is ≤ 500 mg/dL, lipemia (triglyceride) is ≤ 1500 mg/dL, biotin is ≤ 20 ng/mL, and HAMA is ≤ 100 ng/mL in the sample, the interference deviation of the measured results is within ±15%. When the concentration of rheumatoid factor in the sample is ≤ 1500 IU/mL, the relative recovery rate of the test results is between 85% and 115%.

(4) When the sample contains adriamycin (7 μg/mL), methotrexate (8.5 μg/mL), cyclophosphamide (210 μg/mL), 5-fluorouracil (220 μg/mL), cisplatin (57 μg/mL), gemcitabine (382 μg/mL) Leucocorin (115 μg/mL) and dexamethasone (10 μg/mL), the interference deviation of the measured results is within ±15%.

(5) Samples of other tumor markers containing 1000 ng/mL AFP, 1000 U/mL CA125, 100 U/mL CA15-3, 1000 ng/mL CEA, 100 ng/mL PSA and 1000 ng/mL Ferr are tested, and the CA19-9 measured results are not greater than 10 U/mL.

(6) When the CA19-9 concentration under 350000 U/mL, the test results are not be affected by the high-dose hook effect.

**【Analytical Performance charateristics】**

**Lower limit of measurement**

Limit of detection (LoD) ≤ 0.6 U/mL.

**Accuracy**

The accuracy control subject to standardized traceability is tested, and the relative deviation of its test results is within ± 10%.

**Linearity**

Within the range of 0.6 U/mL~1000 U/mL, the correlation coefficient (r) of the kit should not be less than 0.9900.

**Repeatability**

The coefficient of variation (CV) ≤ 5.0%.

**Between-run precision**

The coefficient of variation (CV)≤ 10.0%.

**Homogeneity of calibrators and control materials**

In-bottle homogeneity: coefficient of variation (CV) ≤ 5%.
Between-bottle homogeneity: coefficient of variation (CV) ≤ 10%.

**Accuracy of calibrators**

The supporting calibrators of the kit are tested, the relative deviation of test results is within ±10%.

**Measured values of quality control**

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 CA19-9 assay (y) with the Roche Elecsys CA19-9 Method (x) using clinical samples gave the following correlations:

Number of samples measured: 120

Linear regression:

y=1.0021x+2.3422

r=0.9985

**【Precautions and Warnings】**

1. This kit is only used for in vitro diagnosis;
2. When using this kit, the relevant operation precautions of the laboratory must be observed;
3. The test results of this kit can only be used as clinical reference, the patient's clinical evaluation should be based on the patient's clinical symptoms/signs, medical history, other laboratory test results and treatment response, etc.;
4. Due to methodological reasons or antibody specificity, the results of the same sample tested with reagents of different manufacturers may be different. Therefore, results obtained with different kits should not be directly compared, so as to prevent wrong medical interpretation; it is recommended that the Laboratory Department indicate the characteristics of the reagents in the test report issued to the clinician. If the reagent type is changed during series monitoring, continuous testing should be conducted, and the results should be compared with the original reagent results in parallel to re-determine the baseline value;
5. This product contains animal-derived substances, and may have potential biological risks. All samples and reaction wastes should be treated as the source of infection, and all wastes must be disposed of in accordance with local regulations.
6. 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.

**【Symbol】**

| Symbol | Title of Symbol | Symbol | Title of Symbol |
|---|---|---|---|
|  | Manufacturer |  | Consult instructions for use |
|  | Authorized representative in the European Community |  | In vitro diagnostic medical device |
|  | Use-by date |  | Indicates this device is in compliance with Europe Directive |
|  | Batch code |  | Contains sufficient for<*n*>tests |
|  | Serial number |  | Biological risks |
|  | Temperature limitation |  | This way up |
|  | Catalogue number | P/N | Material code |

**【Bibliography】**


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