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SYMBOL KEYS

	Temperature Limitation		Consult Instructions for use		Date of Manufacture		Do not reuse
	Manufacturer	IVD	*In vitro* Diagnostic Medical Device		This side up		Use by
Σ	Contains sufficient for <n> tests	REF	Catalogue Number	LOT	Batch Number / Lot Number	DEVICE	Device

Manufactured by:

Zephyr Biomedicals

A Division of Tulip Diagnostics (P) Ltd.

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0223/VER-01

FIAcheck™

IL-6

Fluorescence Immunoassay for Quantitative determination of Interleukin-6 (IL-6) in Human Serum

DEVICE

FOR IN VITRO DIAGNOSTIC USE ONLY

Store at 4°C to 30°C

INTENDED USE

FIAcheck™ IL-6 Fluorescence Immunoassay is intended for the in-vitro quantitative measurement of Interleukin-6 (IL-6) in human serum.

INTRODUCTION

IL-6 is a pleiotropic pro-inflammatory cytokine, involved in the induction, growth, and differentiation of cells in the immune and hematopoietic systems, and initiates and coordinates inflammatory reaction[1].

Formerly known as B-cell differentiation factor[2], IL-6 is a 24kDa protein that is 212 amino acids (including a 28-amino-acid signal peptide) in length, it is a gene mapped in chromosome 7p21. It is produced by various types of cells, such as macrophages, T-cells, B-cells and fibroblasts[3].

IL-6 is one of the essential factors for antibody production in B cells, a potent growth factor for myeloma and plasmacytoma cells, and induces acute phase proteins in hepatocytes and promotes expansion of activated T-cells.

The detection and control of pro-inflammatory response is crucial in the early stages of viral infection. Coronavirus disease 2019 (COVID-19) is an emerging viral disease of global concern and optimal treatment has yet to be determined. IL-6 is one of the key cytokines after activated macrophages. Therefore, control of systemic IL-6 levels in SARS-CoV-2 infected patients may be a parameter for COVID-19 disease. High levels of inflammatory cytokines were observed in COVID-19 patients with more severe disease and were associated with pulmonary inflammation, lung damage and multiple organ failure. IL-6 is an important cytokine whose production is related with various inflammatory diseases. Subjects with SARS-CoV-2 had high levels of IL-6 that were correlated with patient symptomatology including pulmonary inflammation and extensive lung damage.

A systemic upregulation of IL-6 during the acute phase of viral infection shows the relationship between IL-6 levels and virus virulence. IL-6 is a pleotropic cytokine produced in response to issue damage and infections. IL-6 is considered to be one of the most important cytokines during an infection because it controls the differentiation of monocytes into macrophages, increase B-cell IgG production and also promotes the Th2 (T helper 2) response by inhibiting Th1 (T helper 1) polarization. Production of IL-6 has been associated with both pro- and anti-inflammatory effects.

Generally speaking: IL-6 acts like a messenger which tells other immune cells to fight the infection. Some amount of IL-6 will be made to help prepare your body to fight an infection. When your body makes too much IL-6, it can cause a severe inflammatory response. The amount of IL-6 circulating in the blood, are used as one sign of systemic inflammation. A low level of IL-6 may be expected for most patients with a less severe inflammatory response. A high level of IL-6 may be one sign that the inflammation is severe and could lead to complcations. The development of IL-6 diagnostic kit will help your healthcare provider to check your inflammatory response to the infection by the virus, based on your signs and symptoms (for example: fever, cough, difficulty breathing, low blood pressure). With this test, your healthcare provider is evaluating if you may need additional supportive measures (such as oxygen, intensive care therapy, mechanical ventilation).

PRINCIPLE OF THE TEST

FIAcheck™ IL-6 is based on principle of agglutination of antibodies/anti-sera with respective antigen in immuno-chromatographic format using fluorophores as signal generators. The **FIAcheck™ IL-6** test device is coated with immobilized IL-6 mouse monoclonal antibody 1 on the test line, goat anti chicken IgY in control line and a mixture of IL-6 mouse monoclonal antibody 2 and Chicken IgY labeled with fluorescent microspheres on the binding pad.

IL-6 in sample binds to the IL-6 mouse monoclonal antibody 2 labeled with fluorescent microspheres in the binding pad.

The fluorescent labeled Ag-Ab complex moves forward due to capillary action and is captured by the immobilized IL-6 mouse monoclonal antibody 1 forming a double antibody sandwich and produces the test line. Chicken IgY labelled with fluorescent microspheres binds with goat anti chicken IgY to produce the control line. When the **FIAcheck™** test device is inserted in the **FIAcheck™** analyzer, it scans both the test line and control line. The ratio of the two fluorescence values is used to calculate the concentration of the analyte present in the sample.

MATERIALS AND COMPONENTS

Materials provided with the test kits:

- **FIAcheck™ IL-6** test device in a sealed pouch with desiccant.
- QR Code card for calibration.

Materials required but not provided

- Precision pipettes: 100µl
- Disposable pipette tips
- Disposable Gloves
- **FIAcheck**™ Analyzer (Time Resolved Fluorescence Immunoassay Analyzer)
- Digital Thermometer
- Stopwatch

STORAGE AND STABILITY

1. **FIAcheck**™ **IL-6** kit is stable at 4°C to 30°C upto expiry date printed on the label. DO NOT FREEZE.
2. **FIAcheck**™ Test device should be used within 30 minutes once the foil pouch is opened.
3. If the colour of the desiccant has changed from blue to pink or colourless at the time of opening the pouch, kindly discard the device and use another device.

SAMPLE COLLECTION

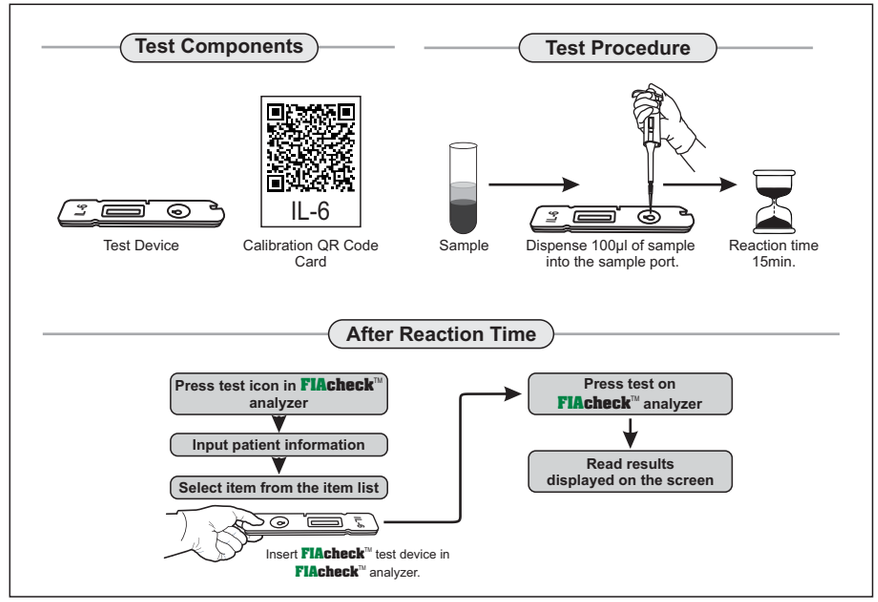
1. Only human Serum sample should be used. Other bodily fluids and samples may not give accurate result.
2. The test should be performed within 4 hours after the sample collection at room temperature.
3. Avoid grossly hemolytic, lipemic or turbid samples.
4. Preferably use fresh samples. However, samples can be stored for 3 days at 2°C to 8°C, and if more than 3 days, they should be stored at -20°C.
5. The sample should be recovered to room temperature (18°C to 30°C) before testing. Avoid repeated freezing and thawing of samples as it can affect test values.
6. Samples containing precipitate or particulate matter should be clarified by centrifugation prior to use.
7. Samples should be free from particulate matter and microbial contamination.

PRECAUTIONS

1. Only for In vitro diagnostic use.
2. After the test device is removed from the sealed pouch, it should be used immediately or within 30 minutes of opening the pouch.
3. Do not reuse the tested **FIAcheck**™ device.
4. Do not use damaged **FIAcheck**™ test device or pouch.
5. All samples should be considered potentially infectious and discarded appropriately as per Standard Bio-Safety guidelines.
6. Do not use kit after the expiry date.
7. Do not mix components of one kit with another.
8. Always use new tip for each sample.
9. Scan QR code card specific to the lot you are using.
10. Ambient temperature of testing environment directly impacts the accuracy of results. Ideal working temperature is 18°C to 30°C.
11. The **FIAcheck**™ test device should be read immediately after the specified reaction time. Delay in reading might affect the accuracy of results.
12. The **FIAcheck**™ test device should be used only in conjunction with **FIAcheck**™ analyzer for accurate and reliable results.

TEST PROCEDURE

1. To calibrate the **FIAcheck**™ **IL-6** kit, scan the QR code card provided with the kit.
2. Remove **FIAcheck**™ **IL-6** test device from sealed pouch and place it horizontally on a clean table, label the device with sample identity.
3. Dispense **100 µl** of sample onto the sample port of **FIAcheck**™ **IL-6** test device.
4. Incubate at room temperature (18°C to 30°C) for **15 minutes**.
5. After 15 minutes, insert the test device immediately into the **FIAcheck**™ analyzer and read results.



Expected Range
Reference Range: ≤10pg/mL
It is recommended that each laboratory establish its own reference range for the population it serves.

PERFORMANCE CHARACTERISTICS

1. Measuring Range: ≤10pg/mL.
2. Accuracy: Based on comparison experiments, the relative standard deviation of ≤15%, and the correlation coefficient of r≥0.990 was observed.
3. Within-Run Precision: ≤15%.
4. Between-Run Precision: ≤15%.
5. Hook Test: No hook effect with high concentration sample. Hook test was conducted with reference material exceeding the upper limit of measuring range, and the detection result was greater than the upper limit of detection.
6. In an internal Study, **FIAcheck**™ **IL-6** was evaluated against commercially available licensed kit with 100 random clinical samples and **FIAcheck**™ **IL-6** has demonstrated 100% clinical correlation with the commercially available licensed kit.

IL-6 Levels	No. of samples	FIAcheck™ IL-6	EIA IL-6
Normal	80	80	80
Low	8	8	8
High	12	12	12

7. In an external Study, **FIAcheck**™ **IL-6** has been evaluated by a NABL accredited lab against their reference method. In this evaluation **FIAcheck**™ **IL-6** has demonstrated 100% correlation with the reference method.
   *Data file: Zephyr Biomedicals (A Division of Tulip Diagnostics (P) Ltd).

LIMITATIONS OF THE ASSAY

1. As with all diagnostic tests, a definite clinical diagnosis should not be based on the results of a single test, but should only be made by the physician after all clinical and laboratory findings have been evaluated.
2. This kit is only for human serum.

WARRANTY

This product is designed to perform as described on the label and package insert. The manufacturer disclaims any implied warranty of use and sale for any other purpose. In the event of performance changes or product malfunction, please contact manufacturer.