



# QUANTUM BT-CEF

## Lateral Flow Test Kit

for the detection of  $\beta$ -lactams, tetracyclines and cefalexin in cow, sheep and goat milk

This Lateral Flow test kit is manufactured by ProGnosis Biotech S.A.

ProGnosis Biotech S.A. is ISO 9001:2015 certified by TÜV Hellas (TÜV NORD).

**Use only the current version of Product Data Sheet enclosed with the kit.**

Quantum BT-Cef, W1030/W1060/W10120, is a lateral flow test for the simultaneous detection of  $\beta$ -lactams, tetracyclines and cefalexin in cow, sheep and goat milk. This kit contains all reagents required for 30, 60 or 120 reactions.

### Matrices:

Raw milk (cow, sheep, goat), pasteurized milk, milk powder, whey.

- **Result in 90 seconds**
- Total test time: 5 min
- Shelf life: 12 months
- Storage: 2-8°C



## 1. Description

The Quantum BT-Cef is a Lateral Flow device for the simultaneous detection of  $\beta$ -lactams, tetracyclines and cefalexin in cow, sheep and goat milk.

## 2. Principle of the method

The Quantum BT-Cef lateral flow test is based on the competitive format immunoassay principle. Three capture lines, one for  $\beta$ -lactams, one for tetracyclines and one for cefalexin are placed below the control line, respectively. The detection system consists of a  $\beta$ -lactam receptor and specific antibodies against tetracycline and cefalexin conjugated with gold nanoparticles. During testing, the milk sample flows through the membrane carrying along the detection system. If the sample is free of antibiotics, a color development occurs at the three test lines, indicating the absence of the targeted analytes in the milk sample. On the contrary, the presence of antibiotics in the sample will cause a reduced colored signal at one, two or three of the test lines depending on the class of antibiotics present. A valid test should always have the upper control line red.

## 3. Reagents provided

The Quantum BT-Cef kit contains sufficient reagents and materials for 30/60/120 measurements.

- 30/60/120 tests (cassette format) in foils
- 30/60/120 disposable plastic fixed-volume pipettes
- Positive standards
- Negative standards
- Instruction manual

## 4. Materials required but not provided

- Clock or timer
- 200 $\mu$ L adjustable single channel micropipette with disposable tips
- S-Flow software along with matching scanner device provided by lateral logic ltd

## 5. Storage instructions

Store kit components between 2 - 8°C. Do not freeze any components provided. Expiry of the kit and reagents is stated on their labels and no quality guarantee is accepted after the expiration date. The expiry of the kit components can only be guaranteed if the components are stored properly and the reagent is not contaminated due to prior handling.

## 6. Safety and precautions for use

All reagents should be brought to room temperature (21 - 25°C) before use (at least half an hour). Do not re-use any of the kit components. Do not use thawed milk.

## 7. Sample preparation

**Milk:** Use milk samples directly in the immunoassay as described in paragraph 10.

**Milk Powder :** Reconstitute the milk powder according to manufacturer's instructions. After reconstitution follow the procedure as described in paragraph 10.

## 8. Negative and positive standards reconstitution

The Quantum BT-Cef kit contains 1 strip of 8 microwells with negative standards (green) and 1 strip of 8 microwells with positive standards (red).

- **Negative (green):** Add 200 $\mu$ l distilled water into the microwell and mix well.
  - **Positive (red):** Add 200 $\mu$ l **negative raw cow's milk** into the microwell and mix well.
- After reconstitution follow the procedure as described in paragraph 10.

## 9. Sensitivity

Table 1. Limits of Detection for every compound.

	Compound	LOD ( $\mu$ g/kg)	Compound	LOD ( $\mu$ g/kg)
<b><math>\beta</math>-Lactams</b>	Penicillin-G	2 - 3	Cephapirin	6 - 10
	Ampicillin	3 - 4	Cefazolin	30 - 40
	Amoxicillin	3 - 4	Cephalexin	25 - 45
	Oxacillin	6 - 10	Cefalonium	4 - 8
	Cloxacillin	6 - 10	Ceftiofur	90 - 100
	Dicloxacillin	4 - 8	Cefquinome	6 - 10
	Nafcillin	8 - 12	Cefoperazone	4 - 8
	-		Cefacetrile	8 - 12
<b>Tetracyclines</b>	Tetracycline	70 - 90	Chlorotetracycline	70 - 90
	Oxytetracycline	60 - 80	Doxycycline	80 - 100

## 10. Method procedure

1. Before opening the reagents, take the kit out of the refrigerator (for at least half an hour) and wait until the temperature of the reagents reaches the ambient temperature.
2. Open as many foils with cassettes as the number of milk samples to be tested.
3. Shake the milk samples vigorously by hand or vortex.
4. Use a disposable plastic fixed-volume pipette and add the milk sample in the circular window of the cassette. The ideal temperature of the milk is between 8- 25°C. Do not re-use the plastic fixed-volume pipettes.
5. Place the cassette inside the plastic holder and press SCAN using the S-flow software. The cassette must be facing up. The 5 minute count down starts immediately.

## 11. Interpretation of results

The Quantum BT-Cef lateral flow test is manufactured to work along with a scanner device, S-Flow or 3PR.

**1st Quantum read:** 90 seconds after the start of the analysis the device scans the cassette automatically,

- ⇒ If the sample is free of antibiotics, the analysis stops and the result is **negative** for all antibiotic groups.
- ⇒ If the sample is **suspected positive** for an antibiotic, the analysis continues until it completes 5 minutes.

**Final Quantum read:** After the end of analysis the S-Flow software will use the ratio, R, of the test line and the control line to calculate the results (Table 2).

Table 2. Instrumental Interpretation

Ratio	R>1.1	0.9≤R≤1.1	R<0.9
Interpretation	Negative	Weak Positive	Positive

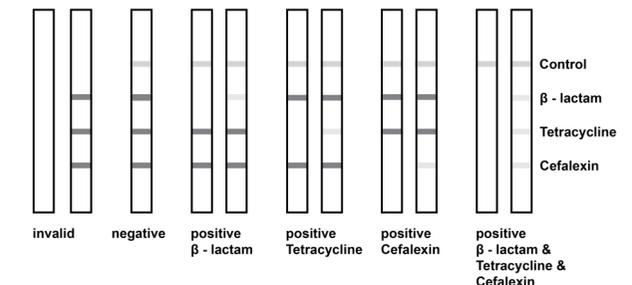
**Note 1:** The **1st Quantum read** (90 seconds) is configured for use with fresh raw cow's milk. If there are inconclusive results after 90 seconds, the reader may proceed to a **2nd Quantum read**.

**Note 2:** In the case of **whely** samples, result interpretation must be performed using the reader when the analysis completes 5 minutes; Quantum Read or visual interpretation is not applicable for this matrix.

## 12. Visual Interpretation

When the analysis is completed (5 min), the stick can also be visually read and interpreted according to the following figure.

Visual result interpretation index



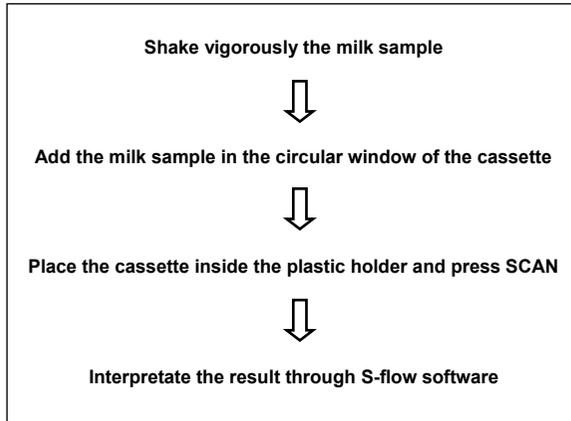
1. The control line should always be visible, if not the test is invalid.
2. When the control line can be seen, compare the intensity of each test line with the intensity of the control line:
  - i. If the test line is darker than the control line (T>C), the sample contains no antibiotics or antibiotics at a lower level than the detection limits.
  - ii. If the test line is the same with the control line (T=C), the sample contains antibiotics close to the detection limits
  - iii. If the test line is lighter than the control line (T<C), the sample contains antibiotics above the detection limits.

### 13. Interferences

There are no interferences from somatic cells at  $10^6$  SCC/ml, bacteria at  $3 \times 10^6$  CFU/ml, fat or protein content.

### 14. Method summary

Total method time: 5 minutes.



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All immune assays supplied by ProGnosis Biotech S.A., are warranted to meet or exceed our published specification when used under normal conditions in your laboratory. If the product fails during the stated period, a replacement product will be issued.

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W1030-W1060-W10120 Manual\_Quantum\_BT-Cef\_v7\_en



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