Quality Control (QC) Criteria

- The correlation coefficient (R^2) of the calibration curve, analyzed using a 4-parameter logistic regression, must be ≥ 0.99.
- The average absorbance of the zero calibrator replicates must be ≥ 1.0.
- The average absorbance of calibrator replicates must have a coefficient of variation (%CV) < 15%.
- The average absorbance of sample replicates must have a coefficient of variation (%CV) < 20%.

Result Interpretation

It is preferred for quantitative results to be determined using commercially available software for ELISA evaluation using a 4-parameter curve fit. Alternatively, a semi-log curve fit can be used if 4-parameter software is not available. A spreadsheet that will perform the curve fit and sample concentration calculations is available upon request. Please contact Beacon for further details.

To ensure the validity of the results, please adhere to the following:

- Ensure QC criteria are met.
- The concentration of Aflatoxin M1 in a sample is determined by comparing the average sample absorbance to the standard curve. This value must then be multiplied by the dilution factor used.
- In the event that the average absorbance of the sample is lower than the highest calibrator, further dilute the sample extract in laboratory quality distilled or deionized water to fit into the standard curve and retest alongside the calibrators. Sample results must be multiplied by the total dilution factor used.

Technical Assistance

For questions regarding this kit or for additional information about Beacon products, contact us.

Beacon Analytical Systems, Inc.
82 Industrial Park Rd. Saco, ME 04046
Tel. +1-207-571-4302
info@beaconkits.com | www.beaconkits.com

Safety

Stop Solution is 1N hydrochloric acid. Handle with care. To receive complete safety information on this product, contact Beacon Analytical Systems, Inc., and request Safety Data Sheets.

General Limited Warranty

Intended Use

The Beacon Aflatoxin M1 Plate Kit is an immunoassay for the detection of Aflatoxin M1 in fresh milk samples and other dairy products. This product is intended for research use only.

Principles

Calibrators and the Sample Extract(s) are pipetted into the test wells followed by Aflatoxin M1 HRP Enzyme Conjugate. During an incubation, Aflatoxin M1 in the calibrator/sample and Aflatoxin M1 HRP Enzyme Conjugate compete for binding to the polyclonal Aflatoxin M1 antibody immobilized on the test wells surface. Following the incubation, the wells are washed to remove any unbound Aflatoxin M1 and Aflatoxin M1 HRP Enzyme Conjugate. After washing, a colorless substrate is added to the wells and any bound enzyme conjugate will convert the substrate to a blue color. Following an incubation, the reaction is stopped with the addition of Stop Solution and the amount of color in each well is measured. The color of the unknown sample is compared to the color of the calibrators and the Aflatoxin M1 concentration of the sample is derived.

Reagents and Materials Provided

1 X Unit	Plate containing 12 test strips of 8 wells each that are vacuum sealed in an aluminized pouch with a desiccant.
6 X 2 mL	Vials of Aflatoxin M1 Calibrators (0, 2, 5, 10, 30 and 60 ppt).
1 X 12 mL	Bottle of Aflatoxin M1 HRP Enzyme Conjugate.
1 X 50 mL	Bottle of 10X Wash Concentrate (dilute prior to use).
1 X 14 mL	Bottle of Substrate.
1 X 14 mL	Bottle of Stop Solution.

Reagents and Materials Required but Not Provided

- Pipette(s) with disposable tips capable of dispensing the required volume(s).
- Multichannel pipette(s) (8 channels) with disposable tips capable of dispensing the required volume(s) (recommended if running more than two strips at once).
- Laboratory quality distilled or deionized water.
- Reagents and materials for sample preparation.
- Materials for 1X wash solution preparation.
- Personal protective equipment.
- Paper towels or equivalent absorbent material.
- Timer.
- Microtiter plate or strip reader capable of reading at 450 nm.

Kit Handling Notes and Precautions

- Read the product brochure in its entirety prior to use.
- The kit, in its original packaging, can be used until the end of the month indicated on the box label.
- Do not use reagents after expiration date.
- Store all kit components at 2°C to 8°C (36°F to 46°F) when not in use.
- Reagents should be brought to room temperature, 20°C to 28°C (68°F to 82°F), prior to use. Avoid prolonged (> 24 hours) storage at room temperature.
- Do not freeze kit components or expose them to temperatures greater than 37°C (99°F).
- Running Calibrators and Samples in duplicate will improve assay precision and accuracy.
- Precise transfer of samples and reagents by using a calibrated pipette that is capable of dispensing the required volume is critical to obtain proper assay results.
- If running more than two strips at once, the use of a multi-channel pipette is recommended when adding the Substrate and Stop Solution.
- All procedural steps should be completed without interruption. Ensure all reagents, materials and equipment are ready at the appropriate time.
- Each reagent is optimized for use in the Beacon Aflatoxin M1 Plate Kit. Do not substitute reagents from any other manufacturer into the test kit. Do not combine reagents from other Beacon Aflatoxin M1 Plate Kits with different lot numbers.
- Do not reuse test wells.
- Dilution or adulteration of reagents or samples not called for in the procedure may result in inaccurate results.
- Damage to or obstruction of the optical surface may cause unsatisfactory results.

Specificity

The Beacon Aflatoxin M1 Plate Kit can detect Aflatoxin M1 and M2. The percent cross-reactivity (based on IC_{50}) of Aflatoxin M2 relative to Aflatoxin M1 is shown in the table below.

Compound	% Cross-Reactivity
Aflatoxin M1	100
Aflatoxin M2	11

Sample Preparation

Dry Milk Powder:

1. Weigh 3 g of dry powder milk into a clean container.
2. Measure 30 mL of laboratory quality distilled or deionized water and add to the container.
3. Gently vortex the container for 2 minutes to dissolve the powder completely.
4. Transfer 1.2 - 1.4 mL (per tube) of the reconstituted milk sample into two microcentrifuge tubes.
5. Centrifuge the samples for 5 minutes at 12,000 X g.
6. Transfer the middle liquid layer of each sample into one clean glass tube. Avoid pipetting the top lipid layer.
7. Gently vortex the glass tube to mix the contents.

Fresh Milk/Raw Milk:

1. Transfer 1.2 - 1.4 mL (per tube) of the milk sample into two microcentrifuge tubes.
2. Centrifuge the samples for 5 minutes at 12,000 X g.
3. Transfer the middle liquid layer of each sample into one clean glass tube. Avoid pipetting the top lipid layer.
4. Gently vortex the glass tube to mix the contents.

1X Wash Solution Preparation

1. Measure 450 mL of laboratory quality distilled or deionized water and transfer to a clean container with a tight-fitting lid.
2. Transfer the contents of the 10X Wash Concentrate bottle to the container.
3. Gently swirl to mix.
4. Transfer the 1X Wash Solution to a wash bottle to use in the assay.

Assay Procedure

1. Allow kit components and the sample extract(s) to reach room temperature prior to running the test.
2. Place the appropriate number of test wells into a holder. Be sure to re-seal unused test wells in the zip-lock bag with the desiccant to limit exposure to moisture.
3. Dispense **100 µL of Calibrators and Sample Extract(s)** into the appropriate well. Be sure to use a clean pipette tip for each solution to avoid cross contamination.
4. Gently shake the wells for 30 seconds using a back-and-forth motion and incubate for **30 minutes** at room temperature.
5. Dispense **100 µL of Enzyme Conjugate** into each well.
6. Gently shake the wells for 30 seconds using a back-and-forth motion and incubate for **15 minutes** at room temperature.
7. Decant the contents of the wells into an appropriate waste container. Fill the wells to overflowing with 1X Wash Solution and then decant. Repeat this wash step four times for a total of five washes. Following the last wash, tap the inverted wells onto absorbent paper to remove excess wash solution. Alternatively, the last wash can be done using laboratory quality distilled or deionized water to reduce interference associated with wash solution bubbles.
8. Dispense **100 µL of Substrate** into each well.
9. Gently shake the wells for 30 seconds using a back-and-forth motion and incubate for **30 minutes** at room temperature.
10. Dispense **100 µL of Stop Solution** into each well in the same order of addition as the Substrate.
11. Gently shake the wells for 30 seconds using a back-and-forth motion.
12. Carefully wipe the optical surface with a soft, lint-free wipe. Measure and record the absorbance (Optical Density; OD) of each well at 450 nm using a plate or strip reader within 10 minutes of stopping the assay. If the reader has dual wavelength capability, read at 450 nm minus 605 or 650 nm.
13. Dispose of used test wells in an appropriate waste container.