

Result Interpretation

Semi-Quantitative Interpretation: Semi-quantitative results can be derived by simple comparison of the sample absorbances to the absorbance of the calibrators:

- Samples with a lower absorbance (less color) than a calibrator have a concentration of Solanine greater than the concentration of the calibrator.
- Samples with a higher absorbance (more color) than a calibrator have a concentration less than the concentration of the calibrator.

Quantitative 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.

- The concentration of Solanine 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.
- Samples with absorbances lower than the highest calibrator contain a concentration of Solanine too high for quantification. Further dilute the sample extract in Sample Dilution Buffer to fit into the standard curve and retest along with the calibrators. Results must then be multiplied by the dilution factor used.
- Samples with Solanine absorbances greater than the lowest calibrator or less than the highest calibrator must be reported as < 2 ppb or > 30 ppb, respectively.

Technical Assistance

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

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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

Beacon Analytical Systems, Inc. ("Beacon") warrants the products manufactured by it against defects in materials and workmanship when used in accordance with the applicable instructions for a period not to extend beyond a product's printed expiration date. BEACON MAKES NO OTHER WARRANTY, EXPRESSED OR IMPLIED. THERE IS NO WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. The warranty provided herein and the data, specifications and descriptions of Beacon products appearing in published catalogues and product literature may not be altered except by express written agreement signed by an officer of Beacon. Representations, oral or written, which are inconsistent with this warranty, or such publications are not authorized and, if given, should not be relied upon. In the event of a breach of the foregoing warranty, Beacon's sole obligation shall be to repair or replace, at its option, any product or part thereof that proves defective in materials or workmanship within the warranty period, provided the customer notifies Beacon promptly of any such defect. The exclusive remedy provided herein shall not be deemed to have failed of its essential purpose so long as Beacon is willing and able to repair or replace any nonconforming Beacon product or part. Beacon shall not be liable for consequential, incidental, special or any other indirect damages resulting from economic loss or property damage sustained by a customer from the use of its products. However, in some states the purchaser may have rights under state law in addition to those provided by this warranty.



Intended Use

The Beacon Solanine Plate Kit is an immunoassay for the detection of the glycoalkaloids α -Solanine and α -Chaconine in potato and pet food samples. This product is intended for research use only.

Principles

Solanine HRP Enzyme Conjugate is pipetted into the test wells followed by the Calibrators and the Sample Extract(s). A soluble polyclonal Solanine antibody solution is then added to the test wells to initiate the reaction. During an incubation, Solanine and Solanine HRP Enzyme Conjugate compete for binding to the soluble Solanine antibody which is in turn immobilized on the test wells. Following the incubation, the wells are washed to remove any unbound Solanine and Solanine 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 Solanine concentration of the sample is derived.

Reagents and Materials Provided

- 1 Plate containing 12 test strips of 8 wells each that are vacuum sealed in an aluminized pouch with a desiccant.
- 5 Vials of Solanine Calibrators (0, 2, 5, 10, and 30 ppb).
- 1 Bottle of Solanine HRP Enzyme Conjugate.
- 1 Bottle of Solanine Antibody.
- 1 Bottle of Sample Dilution Buffer.
- 1 Bottle of Substrate.
- 1 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.
- Personal protective equipment.
- Paper towels or equivalent absorbent material.
- Wash bottle (optional).
- 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 4°C to 8°C (39°F to 46°F) when not in use.
- Reagents should be brought to room temperature, 20°C to 28°C (62°C 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 Antibody, 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 Solanine Plate Kit. Do not substitute reagents from any other manufacturer into the test kit. Do not combine reagents from other Beacon Solanine Plate Kits with different lot numbers.
- 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 percent cross reactivity of glycoalkaloid compounds in the Beacon Solanine Plate Kit are shown in the table below. The test kit will detect a total amount of Solanine and Chaconine with the sample results expressed as Solanine equivalents.

Compound	% Cross-Reactivity
α-Solanine	100
α-Chaconine	96

Sensitivity

The limit of detection (LOD) for the assay are shown in the table below.

Compound	LOD (ppm)
Raw Potato	2
Pet Food	0.2

Sample Extraction Solution Preparation (60% Methanol)

1. Measure 40 mL of distilled or deionized water for each 100 mL being prepared and transfer to a clean glass container with a tight-fitting lid.
2. Measure 60 mL of methanol for each 100 mL being prepared and add to the container.
3. Cover and swirl to mix. Store tightly sealed to minimize evaporative loss.

Sample Preparation

Raw Potato: (Dilution Factor: 1000)

1. Homogenize the sample.
2. Weigh 5 g of the homogenized sample into a blender jar.
3. Measure 50 mL of Sample Extraction Solution and add to the jar.
4. Blend for 20-30 seconds in a high-speed blender.
5. Filter the top layer of the sample extract into a clean container using a glass fiber filter.
6. Dilute the filtered extract 1:100 in Sample Dilution Buffer.
7. Thoroughly mix and use in the assay.

Pet Food Containing Potato: (Dilution Factor: 100)

1. Homogenize the sample.
2. Weigh 5 g of the homogenized sample into a clean container with a tight-fitting lid.
3. Measure 50 mL of Sample Extraction Solution and add to the jar. Vortex to mix.
4. Sonicate for 1 minute. Let sit for 5 minutes before proceeding.
5. Filter the top layer of the sample extract into a clean container using a glass fiber filter.
6. Dilute the filtered extract 1:10 in Sample Dilution Buffer.
7. Thoroughly mix and 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 **50 µL of Enzyme Conjugate** into each well.
4. Dispense **50 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.
5. Dispense **50 µL of Antibody** into each well.
6. Gently shake the wells for 30 seconds using a back-and-forth motion and incubate for **30 minutes** at room temperature.
7. Decant the contents of the wells into an appropriate waste container. Fill the wells to overflowing with laboratory quality distilled or deionized water 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.
8. Dispense **100 µL of Substrate** into each well.
9. 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.