

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 Neo-Saxitoxin 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 Neo-Saxitoxin too high for quantification. Further dilute the sample extract to fit into the standard curve and retest along with the calibrators. Results must then be multiplied by the dilution factor used.
- Samples with Neo-Saxitoxin absorbances greater than the lowest calibrator or less than the highest calibrator must be reported as < 0.03 ppb or > 1.5 ppb, respectively.
- The Neo-Saxitoxin (NEO-STX) concentration in the sample can be converted to µg of NEO-STX diHCl equivalent/100 g by using the following equation:

$$\frac{\mu\text{g of NEO-STX diHCl equiv.}}{100\text{ g}} = 1.244 \times \text{NEO-STX Conc.} \times \frac{D \times V}{10 \times M}$$

$$1.244 = \frac{\text{Molecular weight of Neo-Saxitoxin diHCl equivalent (372.2 g/mol)}}{\text{Molecular weight of Neo-Saxitoxin (299.29 g/mol)}}$$

NEO-STX Conc. = Neo-Saxitoxin concentration in the sample in ppb
D = Dilution factor
V = Total volume of extract in mL
(ex. 10 g of homogenized tissue + 10 mL 0.1N HCl = 20 mL)

$$10 = \frac{1000\text{ g}}{100\text{ g}}$$

M = Mass of shellfish homogenate in g

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

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Intended Use

The Beacon Neo-Saxitoxin Plate Kit is an immunoassay for the detection of Neo-Saxitoxin in shellfish samples. This product is intended for research use only.

Principles

Calibrators and the Sample Extract(s) are pipetted into the mixing wells followed by Neo-Saxitoxin HRP Enzyme Conjugate. The reagents are mixed and transferred to the test wells to initiate the reaction. During an incubation, Neo-Saxitoxin in the calibrator/ sample and Neo-Saxitoxin HRP Enzyme Conjugate compete for binding to the polyclonal Neo-Saxitoxin antibody immobilized on the test wells surface. Following the incubation, the wells are washed to remove any unbound Neo-Saxitoxin and Neo-Saxitoxin 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 Neo-Saxitoxin 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.
- 1 Plate containing 12 strips of 8 mixing wells each that are packaged in a zip-loc bag.
- 6 Vials of Neo-Saxitoxin Calibrators (0, 0.03, 0.08, 0.2, 0.5, and 1.5 ppb).
- 1 Bottle of Neo-Saxitoxin HRP Enzyme Conjugate.
- 1 Bottle of 10X Wash Concentrate (dilute prior to use).
- 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).
- 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 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°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 Neo-Saxitoxin Plate Kit. Do not substitute reagents from any other manufacturer into the test kit. Do not combine reagents from other Beacon Neo-Saxitoxin 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 following table shows the percent cross reactivity of Neo-Saxitoxin.

Compound	% Cross-Reactivity
Neo-Saxitoxin	100
Neo-Saxitoxin Dihydrochloride	123
Saxitoxin Dihydrochloride	11
Decarbamoyl Saxitoxin	< 1
GTX 2 & 3	< 1
GTX 1 & 4	< 0.1
Decarbamoyl GTX 2 & 3	0.4
Decarbamoyl Neo-Saxitoxin	0.7

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.

Sample Preparation

Shellfish: (Dilution Factor: 50)

1. Thoroughly clean the outside of the mussels with laboratory quality distilled or deionized water.
2. Cut the adductor muscles of the mussel using a sharp knife.
3. Rinse off the inside of the mussel with laboratory quality distilled or deionized water to remove sand and other foreign substances.
4. Detach the tissue from the mussel shell by removing the tissue and adductor muscles that connect it at the hinge.
5. Weigh 120 – 150 g of mussel tissue and transfer to a sieve.
6. Gently shake the sieve to drain the excess liquid.
7. Transfer the drained tissue to a clean, 500 mL container and homogenize to a soupy texture.
8. Weigh 10 g of homogenized tissue into a conical tube.
9. Measure 10 mL of 0.1N HCl and add to the conical tube.
10. Vigorously shake the conical tube for 2 minutes.
11. Gently boil for 5 minutes.
12. Centrifuge for 20 minutes at 5,000 rpm or 5 minutes at 10,000 rpm.
13. Transfer the supernatant to a clean glass vial.
14. Dilute the extract 1:50 in 10% methanol/0.001N HCl 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 mixing wells and 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 mixing well. Be sure to use a clean pipette tip for each solution to avoid cross contamination.
4. Dispense **100 µL of Enzyme Conjugate** into each mixing well.
5. Mix the contents of each well by gently pipetting up and down with a multichannel pipette and transfer **100 µL of the mixture** to the test wells.
6. Incubate the test wells for **30 minutes** at room temperature. Discard the mixing wells.
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.
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.

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 Neo-Saxitoxin 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.