

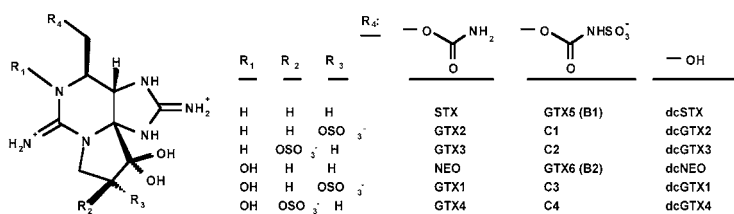
The antibody binds Saxitoxin and other related PSP toxins with varying degrees and does not cross-react with other non-related toxins or compounds.

The assay range is between 0.02 ppb and 0.4 ppb in water. The assay sensitivity allows the determination of saxitoxin in a range of environmental samples (water, mussels, etc).

Total time for measurement is 60 minutes.

The kit, a 96-well microtiter plate format with ready to use, colour coded reagents, enables simultaneous measurement of multiple samples at a reasonable cost.

Chemical structure



Source: M.A. Quilliam, National Research Council Canada

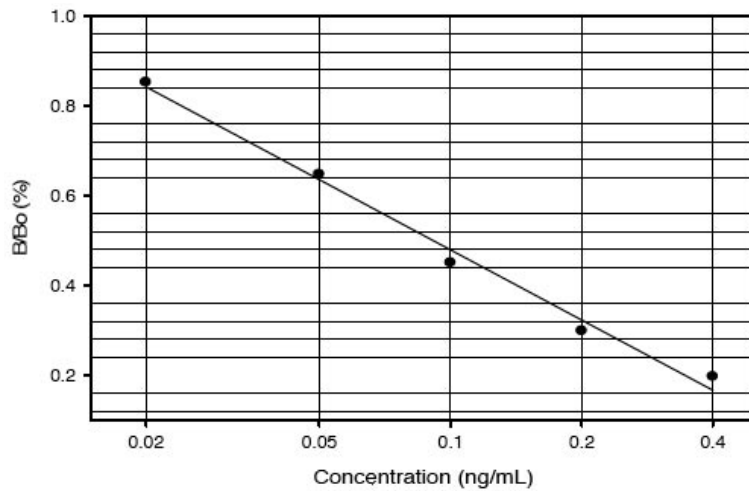
Most of the world's population relies on surface freshwaters as its primary source for drinking water. The drinking water industry is constantly challenged with surface water contaminants that must be removed to protect human health. Toxic cyanobacteria (blue-green algae) blooms are an emerging issue in the U.S. and the world because of increased source water nutrient pollution caused by eutrophication. Saxitoxin is one of the "paralytic shellfish poisons" (PSP). Saxitoxin is a naturally produced toxin by several gonyaulacoid or gymnodinioid dinoflagellates, including *Alexandrium*, *Gymnodinium*, *Pyrodinium*, and has also been found in freshwater cyanobacterial strains such as *Cylindrospermopsis raciborskii*.

Paralytic shellfish poisoning is the most widespread algal derived shellfish poisoning in the world. The toxins responsible for PSP are heterocyclic guanidines (saxitoxins), there are over 21 known congeners. Substitution at R4 results in substantial changes in toxicity. Saxitoxin binds with high affinity to site 1 on the voltage dependent sodium channel, inhibiting channel opening.

PSP toxic syndrome is due primarily to the consumption of molluscan shellfish that have accumulated PSP toxins as a result of filter-feeding on toxic dinoflagellates. Fish and crabs have also been implicated as vectors of PSP toxins. PSP toxin syndrome is characterized in its most severe form by paralysis of the breathing muscles, which if untreated could lead to death. At lower doses of the toxin, symptoms can range from mild stomach upset to a tingling sensation in the lips. The regulatory limit for PSP toxins is 40-80 µg PSP/100 grams of sample.

The ELISA kit detects saxitoxins in water samples at the parts per trillion (ppt) levels. Saxitoxin on tissue samples can be detected at the ppb levels.

Saxitoxin Standard Curve



Samples containing Saxitoxin within the dynamic range (0.02-0.4 ppb) can be directly tested in the assay

Cross-Reactivity

This ELISA recognizes Saxitoxin and other PSP toxins with varying degrees:

| Compound | X-Reactivity |
|-----------------------|------------------------|
| Saxitoxin (STX) | 100 % (per definition) |
| Decarbamoyl STX | 29 % |
| GTX 2 & 3 | 23 % |
| GTX-5B | 23 % |
| Sulfo GTX 1 & 2 | 2.0 % |
| Decarbamoyl GTX 2 & 3 | 1.4 % |
| Neosaxitoxin | 1.3 % |
| Decarbamoyl Neo STX | 0.6 % |
| GTX 1 & 4 | <0.2 % |

Basic Test Procedure

- Add 50µl of sample, 50µl of enzyme conjugate, and 50µl of antibody solution.
- Incubate for 30 minutes.
- Wash 4 times with 250 µl of wash solution.
- Add 100µl of colour solution.
- Incubate for 30 minutes.
- Stop the reaction by adding 100µl of stop solution and read colour at 450 nm.
- Quantitate results

Kit Format: Microplate (96T) and reagents PN 52255B

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