

# Spinosyn Tube Kit

PN 50020B

Instructional Booklet  
Read Completely Before Use.

## Intended Use

The Spinosyn Tube Kit is a competitive ELISA for the quantitative analysis of Spinosyn in water samples.

## Assay Principles

The Spinosyn Tube Kit is a competitive enzyme-labeled immunoassay. The sample is mixed with a special diluent and then added in conjunction with specific Spinosyn antibodies to a test tube coated with a second anti-species antibody. After the initial 15 minute incubation of Antibody with sample, enzyme-labeled Spinosyn is added to the tube. The toxin from the extract and the enzyme-labeled toxin compete for a limited number of antibody binding sites. Following this second 15 minute incubation, the contents of the tubes are removed and the tubes are washed to remove any unbound toxin or enzyme-labeled toxin. A clear substrate is then added to the tubes and any bound enzyme-toxin conjugate causes the conversion to a blue color. Following a 15 minute incubation, the reaction is stopped and amount of color in each tube is read. The color of unknown samples is compared to the color of the calibrators and the Spinosyn concentration of the samples is derived.

## REAGENTS AND MATERIALS PROVIDED

The kit in its original packaging can be used until the end of the month indicated on the box label when stored at 2 – 8°C.

1. 100 anti-Rabbit IgG (capture antibody) coated test tubes in a sealed foil pouches with indicating dessicant.
2. 5 vials each containing 10 mL of Spinosyn calibrators corresponding to 0, 0.05, 0.125, 0.25 and 0.5 µg/kg (ppb) of Spinosyn(XDE-175) in a buffered solution.
3. 1 vial containing 30 mL of Spinosyn-HRP Enzyme Conjugate.
4. 1 vial containing 30 mL of anti-Spinosyn antibodies.
5. 1 amber vial containing 60 mL of Substrate.
6. 1 vial containing 60 mL of Stop Solution. (Caution! 1N HCl. Handle with care.)
7. 1 vial Stabilizer/Surfactant Solution
8. 1 bottle containing 1 L, Wash Solution,
9. Instructions

## PRECAUTIONS

1. Each reagent is optimized for use in the Spinosyn Tube Kit. Do not substitute reagents from any other manufacturer into the test kit. Do not combine reagents from other kits with different lot numbers.
2. Dilution or adulteration of reagents or samples not called for in the procedure may result in inaccurate results.
3. Do not use reagents after expiration date.
4. Reagents should be brought to room temperature, 20 – 28°C (62 – 82°F) prior to use. Avoid prolonged (> 24 hours) storage at room temperature.

5. Spinosyn is a toxic substance. Dispose of all liquids in an appropriate manner.
6. The Stop Solution is 1N hydrochloric acid. Avoid contact with skin and mucous membranes. Immediately clean up any spills and wash area with copious amounts of water. If contact should occur, immediately flush with copious amounts of water.

### **MATERIALS REQUIRED BUT NOT PROVIDED**

1. Laboratory quality distilled or deionized water.
2. Pipet with disposable tips capable of dispensing 250 and 500  $\mu\text{L}$ .
3. Paper towels or equivalent absorbent material.
4. Photometer capable of reading 12mm tubes at 450nm.
5. Timer
6. Balance

### **SAMPLE PREPARATION**

1. Spinosyn adsorbs to glass and plastic surfaces. Immediately upon collection of sample, add 1mL 100X surfactant solution per 100 mL sample.
2. Samples containing  $>0.5$  ppb Spinosyn will need to be diluted to obtain correct results. Dilution is recommended using the 1X surfactant solution.

### **TEST PROCEDURE**

1. Allow reagents and sample extracts to reach room temperature prior to running the test.
2. Place the appropriate number of capture antibody-coated tubes into the tube holder. Be sure to re-seal unused tubes in the zip-lock pouch with desiccant.
3. Dispense **500  $\mu\text{L}$  of each Calibrator and Sample Extract** into the appropriate tubes. Use a clean pipet tip for each.
4. Dispense **250  $\mu\text{L}$  of Antibody solution** into each tube.
5. Shake the rack vigorously to mix the contents of the tubes. Incubate 15 minutes.
6. Dispense **250  $\mu\text{L}$  of Enzyme Conjugate** into each tube.
7. Incubate the tubes for **15 minutes**.
8. Dump the contents of the tubes into an appropriate waste container. Fill the tubes to overflowing with laboratory grade water and dump wash. Repeat 4X for a total of five washes.
9. Following the last wash tap the inverted tubes onto absorbent paper to remove the last of the wash.
10. Dispense **500  $\mu\text{L}$  of Substrate** into each tube.
11. Incubate the tubes for **15 minutes**.
12. Dispense **500  $\mu\text{L}$  of Stop Solution** into each test tube.
13. Read and record the absorbance of the tubes at 450nm.

## RESULTS INTERPRETATION

1. Semi-quantitative results can be derived by simple comparison of the sample absorbances to the absorbance of the calibrator tubes: Samples containing less color than a calibrator tube have a concentration of Spinosyn greater than the concentration of the calibrator. Samples containing more color than a calibrator tube have a concentration less than the concentration of the calibrator.
2. Quantitative interpretation requires graphing the absorbances of the calibrators (X axis) versus the log of the calibrator concentration (Y axis) on semi-log graph paper. A straight line is drawn through the calibrator points and the sample absorbances are located on the line. The corresponding point on the Y axis is the concentration of the sample. Samples with absorbances greater than the lowest calibrator or less than the highest calibrator must be reported as < 0.05 ppb or >0.5 ppb, respectively.

Alternatively, Beacon can supply a spreadsheet template which can be used for data reduction. Please contact Abraxis for further details.

## PERFORMANCE DATA

### SPECIFICITY

Compound	IC 85%		IC 50%		IC 20%	
	ppb	%CR	ppb	%CR	ppb	%CR
Spinosyn J	0.021	100.0	0.075	100.0	0.297	100.0
Spinosyn A	0.031	67.7	0.091	82.1	0.310	96.0
Spinosyn D	0.023	90.0	0.088	84.5	0.386	77.0
Spinosyn L	0.026	81.8	0.086	86.5	0.354	84.1
XDE-175-J	0.023	92.6	0.075	100.0	0.263	113.1
XDE-175-L	0.026	81.8	0.092	81.2	0.367	80.9
2'-demethyl XDE-175-L	0.026	80.8	0.089	83.6	0.352	84.5
2'-demethyl XDE-175-J	0.020	106.8	0.073	101.8	0.277	107.2
5,6-dihydro-Spinosyn J	0.025	85.1	0.075	99.6	0.258	115.2

### PRECISION

	0.3ppb	0.1ppb
Replicates	3	3
Days	2	2
n	9	9
Mean (ppb)	0.310	0.104
% CV (intra-assay)	2.31	2.83
% CV (inter-assay)	3.95	0.25
Max % from theoretical	11.2	6.98

### SENSITIVITY

The spinosyn tube assay has a calculated Least Detectable Dose (LDD) of 0.014 ng/mL for XDE-175, which is the compound used for the standards.

**ABRAXIS LLC.**  
54 Steamwhistle Drive  
Warminster, PA 18974

Tel. (215) 357-3911

Fax (215) 357-5232

**www.Abraxiskits.com**

# SPINOSYN DETAILED FLOWCHART

1.



Label test tubes for Standards (Calibrators), Control, and Samples.

Tube #	Content
1, 2	Diluent/Zero
3, 4	Standard 1, 0.05 ppb
5, 6	Standard 2, 0.125 ppb
7, 8	Standard 3, 0.25 ppb
9, 10	Standard 4, 0.5 ppb
11	Sample 1
12	Sample 2
13	Sample 3

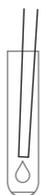
Add 500  $\mu$ L of either Standards, Control or Samples down the inside wall of each test tube by aiming the pipet tip 1/4" to 1/2" below the tube rim without touching the rim or tube wall with the pipet tip; deliver liquid gently.

6.

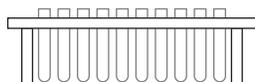


Add 4 mL of Washing Solution to each tube (alternatively flood the tubes completely with wash solution then invert to empty tubes). Using a smooth motion, invert tubes over a sink and pour out the tube contents: keep inverted and blot the test tube rims on several layers of paper toweling. Repeat this step 4 times for a total of five washes.

2.



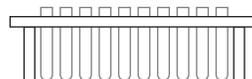
Add 250  $\mu$ L of the Spinosyn Antibody Solution to the bottom of each tube by inserting the pipette tip all the way into the bottom of the tube without touching the side of the tubes.



7.



Add 500  $\mu$ L of Color Reagent down the inside wall of each tube by using the technique described in Box 2.



3.



React 15 minutes at room temperature (15° - 30°C).

8.



React for 15 minutes at room Temperature (15° - 30° C). During this period, add 1 mL of Washing Solution into a clean tube for use as an instrument blank in Step 8.

4.

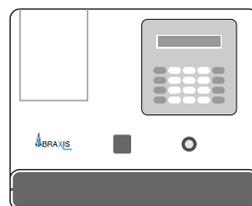


Add 250  $\mu$ L of Spinosyn Enzyme Conjugate down the inside wall of each tube by using the technique described in Box 2. Vortex or swirl for 5 to 10 seconds

9.



Add 500  $\mu$ L of Stopping Solution down the inside wall of each tube by using the technique previously Described. Read results at 450 nm within 15 minutes after adding the Stopping Solution. Multiply results of samples by the appropriate dilution factor (if any).



[Safety Caution: Stopping Solution contains diluted sulfuric acid.]

5.



React 15 minutes at room temperature (15° - 30°C).

For Ordering or Technical Assistance Contact:  
**ABRAXIS, LLC 54 Steamwhistle Drive, Warminster, PA 18974**  
**Phone: 215-357-3911 Fax: 215-357-5232**  
**Web: www.abraxiskits.com**

**Spinosyn Tube Kit Part # 50020B, 40 Test**

# SPINOSYN CONCISE FLOWCHART

1.



Add 500  $\mu$ L of either Standards, Control or Samples to the bottom of each test tube.

6.



Add 4 mL of Washing Solution (alternatively flood the tubes).

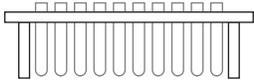
Invert the tubes and blot.

Repeat this step 4 times for a total of five washes.

2.



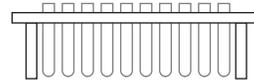
Add 250  $\mu$ L of Antibody Solution to each test tube.



7.



Add 500  $\mu$ L of Color Reagent down the inside wall of each test tube.



3.



Incubate for 15 minutes.

8.



Incubate for 15 minutes.

Prepare blank.

4.



Add 250  $\mu$ L of Spinosyn Enzyme Conjugate to each test tube.

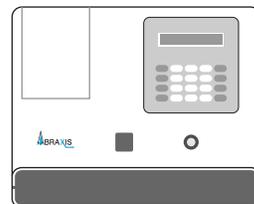
Vortex or swirl.

9.



Add 500  $\mu$ L of Stopping Solution to each test tube.

Read OD 450



5.



Incubate for 15 minutes.

For Ordering or Technical Assistance Contact:  
ABRAXIS, LLC 54 Steamwhistle Drive, Warminster, PA 18974  
Phone: 215-357-3911 Fax: 215-357-5232  
Web: [www.abraxiskits.com](http://www.abraxiskits.com)

Spinosyn Tube Kit Part # 50020B, 40 Test

