Gentamicin ELISA Kit

Item No. 502400

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GENERAL INFORMATION

Materials Supplied

Item Number	Item	Quantity/Size	Storage Temperature
400560	Gentamicin ELISA Monoclonal Antibody (6X)	1 vial/1 ml	-20°C
400559	Gentamicin-HRP Tracer (6X)	1 vial/1 ml	-20°C
400558	Gentamicin ELISA Standard	1 vial	-20°C
401703	Immunoassay Buffer C Concentrate (10X)	1 vial/10 ml	4°C
400062	Wash Buffer Concentrate (400X)	1 vial/5 ml	RT
400035	Polysorbate 20	1 vial/3 ml	RT
400008/ 400009	Goat Anti-Mouse IgG-Coated Plate	1 plate	4°C
400074	TMB Substrate Solution	2 vials/12 ml	4°C
10011355	HRP Stop Solution	1 vial/12 ml	RT
400040	ELISA Tracer Dye	1 ea	RT
400042	ELISA Antiserum Dye	1 ea	RT
400012	96-Well Cover Sheet	1 ea	RT

If any of the items listed above are damaged or missing, please contact our Customer Service department at (800) 364-9897 or (734) 971-3335. We cannot accept any returns without prior authorization.

WARNING: THIS PRODUCT IS FOR RESEARCH ONLY - NOT FOR HUMAN OR VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.

Safety Data

This material should be considered hazardous until further information becomes available. Do not ingest, inhale, get in eyes, on skin, or on clothing. Wash thoroughly after handling. Before use, the user must review the complete Safety Data Sheet, which has been sent *via* email to your institution.

Precautions

Please read these instructions carefully before beginning this assay.

The reagents in this kit have been tested and formulated to work exclusively with Cayman Chemical's Gentamicin ELISA Kit. This kit may not perform as described if any reagent or procedure is replaced or modified.

When compared to quantification by LC/MS or GC/MS, it is not uncommon for immunoassays to report higher analyte concentrations. While LC/MS or GC/MS analyses typically measure only a single compound, antibodies used in immunoassays sometimes recognize not only the target molecule, but also structurally related molecules, including biologically relevant metabolites. In many cases, measurement of both the parent molecule and metabolites is more representative of the overall biological response than is the measurement of a short-lived parent molecule. It is the responsibility of the researcher to understand the limits of both assay systems and to interpret their data accordingly.

The stop solution provided with this kit is an acid solution. Please wear appropriate personal protective equipment (*e.g.* safety glasses, gloves, and lab coat) when using this material.

If You Have Problems

Technical Service Contact Information

Phone: 888-526-5351 (USA and Canada only) or 734-975-3888

Email: techserv@caymanchem.com

In order for our staff to assist you quickly and efficiently, please be ready to supply the lot number of the kit (found on the outside of the box).

Storage and Stability

This kit will perform as specified if stored as directed in the **Materials Supplied** section (see page 3) and used before the expiration date indicated on the outside of the box.

Materials Needed But Not Supplied

1. A plate reader capable of measuring absorbance at 450 nm
2. An orbital microplate shaker
3. Adjustable pipettes; multichannel or repeating pipettor recommended
4. A source of ultrapure water, with a resistivity of 18.2 MΩ·cm and total organic carbon (TOC) levels of <10 ppb, is recommended. Pure water - glass-distilled or deionized - may not be acceptable. *NOTE: UltraPure Water is available for purchase from Cayman (Item No. 400000).*
5. Materials used for **Sample Preparation** (see page 11).

INTRODUCTION

Background

Gentamicin is an aminoglycoside antibiotic.[1,2] It is a mixture of several compounds, including its active components and main constituents gentamicin C1, C1a, and C2 and minor constituents sisomicin, gentamicins A, B, and B1, 2-deoxystreptamine, garamine, and garosamine, with composition varying in a source-dependent manner.[1,3] Gentamicin binds to the bacterial ribosomal 70S subunit and inhibits bacterial protein biosynthesis.[3,4] It is active against various Gram-positive and Gram-negative bacteria, including *M. tuberculosis*.[5] Following administration, gentamicin is rapidly cleared from most tissues but accumulates at high levels in, and is slowly eliminated from, the inner ear and kidney, resulting in eventual oto- and nephrotoxicity, respectively.[2,6] Formulations containing gentamicin are widely used for the treatment of microbial infections in livestock, and this use is associated with enhanced bacterial resistance.[7] In addition, therapeutic use in livestock induces gentamicin accumulation in animal-derived food products resulting in an increased risk of gentamicin-induced oto- and nephrotoxicity in human consumers.[7,8] Due to this increased risk of toxicity and the enhancement of antibiotic resistance, it is pertinent to monitor gentamicin levels in food products.

About This Assay

Cayman's Gentamicin ELISA Kit is a competitive assay that can be used for the quantification of Gentamicin in milk, egg, and tissue homogenates. The assay has a range of 15.6-2,000 pg/ml (0.016-2 ppb), with a midpoint (50% B/B_0) of 100-300 pg/ml (0.1-0.3 ppb) and an average sensitivity (80% B/B_0) of approximately 60 pg/ml (0.06 ppb).

Principle of This Assay

This assay is based on the competition between free gentamicin and a gentamicin-HRP conjugate (Gentamicin-HRP Tracer) for a limited number of gentamicin monoclonal antibody binding sites. Because the concentration of the Gentamicin-HRP Tracer is held constant while the concentration of free gentamicin varies, the amount of Gentamicin-HRP Tracer that is able to bind to the Gentamicin Monoclonal Antibody will be inversely proportional to the concentration of free gentamicin in the well. This antibody-gentamicin complex binds to goat anti-mouse IgG that has been previously attached to the well. The plate is washed to remove any unbound reagents and TMB Substrate solution (which contains the substrate to HRP) is added to the well. The product of this enzymatic reaction has a distinct yellow color and absorbs strongly at 450 nm. The intensity of this color, determined spectrophotometrically, is proportional to the amount of Gentamicin-HRP Tracer bound to the well, which is inversely proportional to the amount of free gentamicin present in the well during the incubation, as described in the equation:

$$\text{Absorbance} \propto [\text{Bound gentamicin-HRP tracer}] \propto 1/[\text{gentamicin}]$$

A schematic of this process is shown in Figure 1, on page 8.

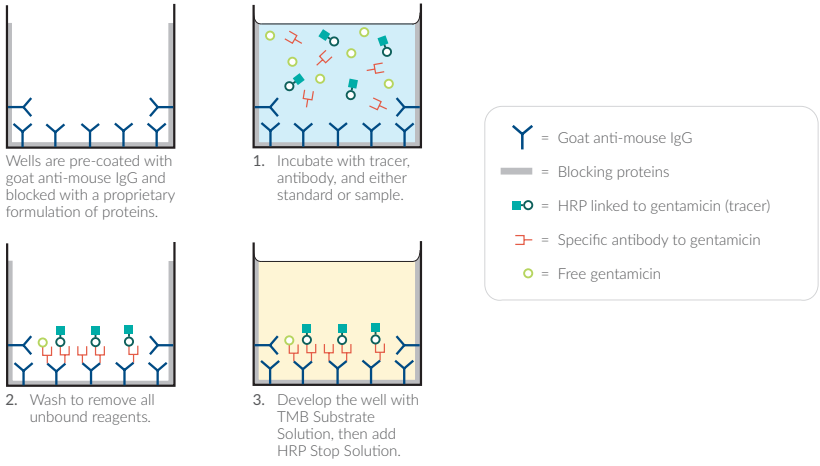


Figure 1. Schematic of the ELISA

Definition of Key Terms

Blk (Blank): background absorbance caused by TMB Substrate Solution and HRP Stop Solution. The blank absorbance should be subtracted from the absorbance readings of all the other wells, including the non-specific binding (NSB) wells.

TA (Total Activity): total enzymatic activity of the gentamicin HRP-linked tracer.

NSB (Non-Specific Binding): non-immunological binding of the tracer to the well. Even in the absence of specific antiserum a very small amount of tracer still binds to the well; the NSB is a measure of this low binding.

B_0 (Maximum Binding): maximum amount of the tracer that the antiserum can bind in the absence of free analyte.

$\%B/B_0$ (%Bound/Maximum Bound): ratio of the absorbance of a sample or standard well to the average absorbance of the maximum binding (B_0) wells.

Standard Curve: a plot of the $\%B/B_0$ values *versus* concentration of a series of wells containing various known amounts of analyte.

Dtn (Determination): one dtn is the amount of reagent used per well.

Cross Reactivity: numerical representation of the relative reactivity of this assay towards structurally related molecules as compared to the primary analyte of interest. Biomolecules that possess similar epitopes to the analyte can compete with the assay tracer for binding to the primary antibody. Substances that are superior to the analyte in displacing the tracer result in a cross reactivity that is greater than 100%. Substances that are inferior to the primary analyte in displacing the tracer result in a cross reactivity that is less than 100%. Cross reactivity is calculated by comparing the mid-point (50% B/B_0) value of the tested molecule to the mid-point (50% B/B_0) value of the primary analyte when each is measured in assay buffer using the following formula:

$$\%\ \text{Cross Reactivity} = \left[\frac{50\%\ B/B_0 \text{ value for the primary analyte}}{50\%\ B/B_0 \text{ value for the potential cross reactant}} \right] \times 100\%$$

LLOD (Lower Limit of Detection): the smallest measure that can be detected with reasonable certainty for a given analytical procedure. The LLOD is defined as a concentration two standard deviations higher than the mean zero value.

PRE-ASSAY PREPARATION

Buffer Preparation

Store all diluted buffers at 4°C; they should be stable for approximately two months. NOTE: It is normal for the concentrated buffers to contain crystalline salts. These will completely dissolve upon dilution with ultrapure water.

1. **Immunoassay Buffer C (1X) Preparation**

   Dilute the contents of one vial of Immunoassay Buffer C Concentrate (10X) (Item No. 401703) with 90 ml of ultrapure water. Be certain to rinse the vial to remove any salts that may have precipitated.

2. **Wash Buffer (1X) Preparation**

   Dilute the contents of the vial of Wash Buffer Concentrate (400X) (Item No. 400062) to a total volume of 2 L with ultrapure water and add 1 ml of Polysorbate 20 (Item No. 400035). Smaller volumes of Wash Buffer (1X) can be prepared by diluting the Wash Buffer Concentrate (400X) 1:400 and adding 0.5 ml of Polysorbate 20 per 1 L of Wash Buffer (1X). *NOTE: Polysorbate 20 is a viscous liquid and cannot be measured by a regular pipette. A positive displacement pipette or a syringe should be used to deliver small quantities accurately.*

Sample Preparation

Testing for Interference

This assay has been validated in milk, egg, and tissue homogenates. Other sample types should be tested for interference to evaluate the need for sample purification before embarking on a large number of sample measurements. To test for interference, dilute one or two samples to obtain at least two different dilutions of each sample within the linear portion of the standard curve. If two different dilutions of the same sample show good correlation (differ by 20% or less) in the final calculated gentamicin concentration, sample purification is not required. If you do not see good correlation of the different dilutions, purification is advised. Purification methods will need to be determined by the end user and tested for compatibility in the assay.

Sample Purification Protocol

Milk, egg, and tissue homogenates were purified prior to the assay using the following protocol. Alternative protocols may be used based on the experimental requirements, sample type, and the end user's expertise.

Reagents to be prepared prior to purification

1. Prepare sodium phosphate buffer: Prepare buffer containing: 150 mM Na_2HPO_4 and 50 mM NaH_2PO_4 in ultrapure water, pH 7.0-7.2.
2. Prepare 10% Trichloroacetic acid (TCA): For example, dilute 10 g of TCA in 100 ml of ultrapure water.
3. For tissue homogenates: Homogenize 100 mg of sample in 1 ml of ultrapure water prior to purification.

Sample Purification

1. Aliquot a known amount of each sample into a clean tube (250 µl is recommended). Vortex the sample to get a uniform mixture.
2. Add 1X the sample volume of 10% TCA and vortex.
3. Incubate for 15 minutes at room temperature and vortex multiple times.
4. Centrifuge the sample at 12,000 x g at 4°C for 10 minutes.
5. Transfer 200 µl of the supernatant to a new tube.
6. Neutralize the supernatant with 400 µl of sodium phosphate buffer and 400 µl of Immunoassay Buffer C (1X), vortexing at each addition.
7. The sample has now been diluted ten-fold and is ready for ELISA analysis.

General Precautions

- All samples must be free of organic solvents prior to assay.
- Samples should be assayed immediately after collection; samples that cannot be assayed immediately should be stored at -20°C.
- Samples of mouse origin may contain antibodies that interfere with the assay by binding to the goat anti-mouse antibody plate. We recommend that all mouse samples be purified prior to use in the assay.

Sample Matrix Properties

Spike and Recovery

Milk, egg, and chicken tissue homogenate were spiked with different amounts of gentamicin, processed as described in the Sample Preparation section, serially diluted with Immunoassay Buffer C (1X), and evaluated using the Gentamicin ELISA Kit. The results are shown below. The error bars represent standard deviations obtained from multiple dilutions of each sample.

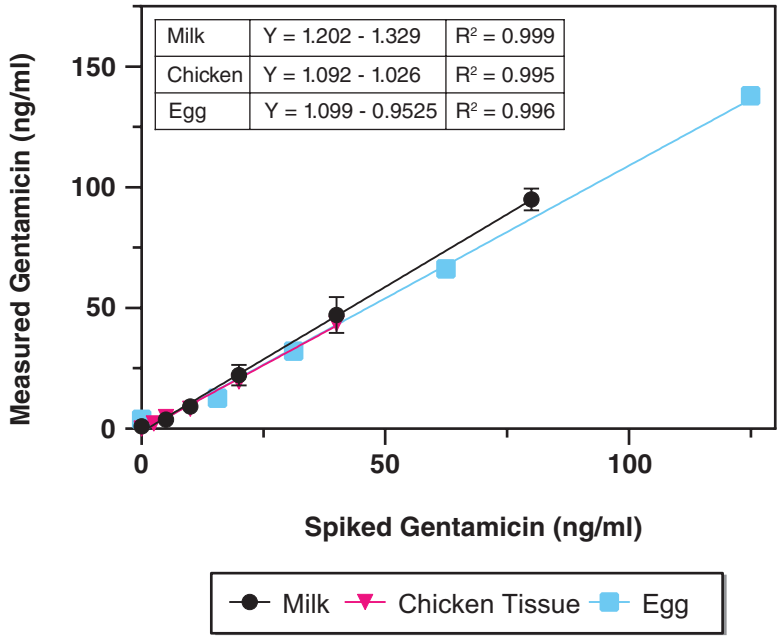


Figure 2. Spike and recovery of gentamicin in milk, egg, and chicken tissue

Linearity

Milk and egg samples were spiked with various concentrations of gentamicin, processed as described in the Sample Preparation section, serially diluted with Immunoassay Buffer C (1X), and evaluated for linearity using the Gentamicin ELISA Kit. The results are shown in Table 1, below.

Dilution Factor	Measured Concentration (ng/ml)	Linearity (%)
Purified milk, spiked with 80 ng/ml gentamicin		
200	90.4	100
400	97.3	108
800	98.9	109
Purified egg, spiked with 125 ng/ml gentamicin		
200	107.2	100
400	95.9	89
800	112.3	105

Table 1. Linearity in milk and egg

NOTE: Linearity has been calculated using the following formula:
*%Linearity = (Observed concentration value, dilution adjusted / First observed concentration value in the dilution series, dilution adjusted)*100*

ASSAY PROTOCOL

Preparation of Assay-Specific Reagents

Gentamicin ELISA Standard

NOTE: Do not use glass tubes to prepare these standard dilutions, vortex each standard dilution for at least 5 seconds.

Equilibrate a pipette tip in ethanol by repeatedly filling and expelling the tip with ethanol several times. Using the equilibrated pipette tip, transfer 10 µl of Gentamicin ELISA Standard (Item No. 400558) into a clean polypropylene test tube, then dilute with 990 µl of ultrapure water and mix thoroughly. The concentration of this solution (the bulk standard) will be 20 ng/ml. It will be stable for two weeks at 4°C.

To prepare the standard for use in ELISA: Obtain eight clean polypropylene test tubes and label them #1-8. Aliquot 900 µl of Immunoassay Buffer C (1X) to tube #1 and 500 µl of Immunoassay Buffer C (1X) to tubes #2-8. Transfer 100 µl of the bulk standard to tube #1 and mix thoroughly. Serially dilute the standard by removing 500 µl from tube #1 and placing it in tube #2; mix thoroughly. Next, remove 500 µl from tube #2 and place it into tube #3; mix thoroughly. Repeat this process for tubes #4-8.

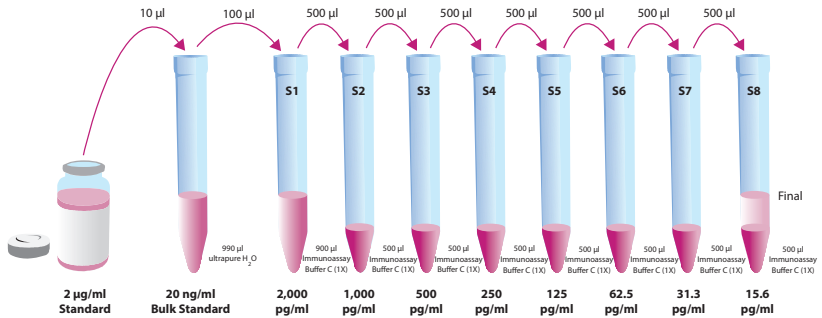


Figure 3. Preparation of the gentamicin standards

Gentamicin-HRP Tracer

Dilute the Gentamicin-HRP Tracer (6X) (Item No. 400559) with 5 ml of Immunoassay Buffer C (1X). Store the diluted Gentamicin-HRP Tracer at 4°C (*do not freeze!*). It will be stable for 1 week. A 20% surplus of tracer has been included to account for any incidental losses.

Tracer Dye Instructions (optional)

This dye may be added to the tracer, if desired, to aid in visualization of tracer-containing wells. Add the dye to the diluted tracer at a final dilution of 1:100 (add 60 µl of dye to 6 ml tracer). *NOTE: Do not store tracer with dye for more than one week at 4°C.*

Gentamicin ELISA Antibody

Dilute the Gentamicin ELISA Antibody (Item No. 400560) with 5 ml of Immunoassay Buffer C (1X). Store the diluted Gentamicin ELISA Antibody at 4°C (*do not freeze!*). It will be stable for at least 2 weeks. A 20% surplus of antibody has been included to account for any incidental losses.

Antiserum Dye Instructions (optional)

This dye may be added to the antibody, if desired, to aid in visualization of antibody-containing wells. Add the dye to the reconstituted antibody at a final dilution of 1:100 (add 60 µl of dye to 6 ml antibody or add 300 µl of dye to 30 ml of antibody) *NOTE: Do not store antibodywith dye for more than one week at 4°C.*

Plate Set Up

The 96-well plate(s) included with this kit must be pre-washed five times with Wash buffer (1X) (300 µl/well) prior to use in the ELISA. *NOTE: Do not store strips after pre-washing. If you do not need to use all the strips at once, place the unwashed/unused strips back in the plate packet and store at 4°C. Be sure the packet is sealed with the desiccant inside.*

Each plate or set of strips must contain a minimum of two Blk, two NSB, and three B_0 wells, and an eight-point standard curve run in duplicate. *NOTE: Each assay must contain this minimum configuration in order to ensure accurate and reproducible results.* Each sample should be assayed at a minimum of two dilutions and each dilution should be assayed in duplicate. For statistical purposes, we recommend assaying samples in triplicate.

A suggested plate format is shown in Figure 4, below. The user may vary the location and type of wells present as necessary for each particular experiment. The plate format provided below has been designed to allow for easy data analysis using a convenient spreadsheet offered by Cayman (see page 21 for more details). It is suggested that the contents of each well be recorded on the template sheet provided (see page 29).

	1	2	3	4	5	6	7	8	9	10	11	12
A	Blk	S1	S1	1	1	1	9	9	9	17	17	17
B	Blk	S2	S2	2	2	2	10	10	10	18	18	18
C	NSB	S3	S3	3	3	3	11	11	11	19	19	19
D	NSB	S4	S4	4	4	4	12	12	12	20	20	20
E	B_0	S5	S5	5	5	5	13	13	13	21	21	21
F	B_0	S6	S6	6	6	6	14	14	14	22	22	22
G	B_0	S7	S7	7	7	7	15	15	15	23	23	23
H	TA	S8	S8	8	8	8	16	16	16	24	24	24

Blk = Blank wells
NSB = Non-Specific Binding wells
B_0 = Maximum Binding wells
TA = Total Activity well
S1-S8 = Standard wells
1-24 = Sample wells

Figure 4. Sample plate format

Performing the Assay

Equilibrate all reagents at room temperature prior to addition to the plate.

Pipetting Hints

- Use different tips to pipette each reagent.
- Before pipetting each reagent, equilibrate the pipette tip in that reagent (*i.e.*, slowly fill the tip and gently expel the contents, repeat several times).
- Do not expose the pipette tip to the reagent(s) already in the well.

Pre-Wash the Plate

Rinse the plate (or strips to be used) five times with ~300 µl Wash Buffer (1X).

Addition of the Reagents

1. **Immunoassay Buffer C (1X)**

   Add 100 µl of Immunoassay Buffer C (1X) to NSB wells. Add 50 µl of Immunoassay Buffer C (1X) to B_0 wells.

2. **Gentamicin ELISA Standard**

   Add 50 µl from tube #8 to both of the lowest standard wells (S8). Add 50 µl from tube #7 to each of the next standard wells (S7). Continue with this procedure until all the standards are aliquoted. The same pipette tip should be used to aliquot all the standards. Before pipetting each standard, be sure to equilibrate the pipette tip in that standard.

3. **Samples**

   Add 50 µl of sample per well. Each sample should be assayed at a minimum of two dilutions. Each dilution should be assayed in duplicate (triplicate recommended).

4. **Gentamicin-HRP Tracer**

   Add 50 µl to each well except the TA and Blk wells.

5. **Gentamicin ELISA Antibody**

   Add 50 µl to each well, except the TA, NSB, and Blk wells, within 15 minutes of addition of the tracer.

Incubation of the Plate

Cover the plate with a 96-Well Cover Sheet (Item No. 400012) and incubate two hours at room temperature on an orbital shaker.

Development of the Plate

1. Empty the wells and rinse five times with ~300 µl Wash Buffer (1X).
2. Add 175 µl of TMB Substrate Solution (Item No. 400074) to each well.
3. Add 5 µl of the diluted tracer to the TA wells.
4. Cover the plate with the 96-Well Cover Sheet and protect from light. Optimum development is obtained by using an orbital shaker at room temperature for 30 minutes.
5. Remove the plate cover being careful to keep TMB Substrate Solution from splashing on the cover. *NOTE: Any loss of TMB Substrate Solution will affect the absorbance readings.*
6. **DO NOT WASH THE PLATE.** Add 75 µl of HRP Stop Solution (Item No. 10011355) to each well of the plate. Blue wells should turn yellow and colorless wells should remain colorless. *NOTE: The stop solution in this kit contains an acid. Wear appropriate protection and use caution when handling this solution.*

Reading the Plate

1. Wipe the bottom of the plate with a clean tissue to remove fingerprints, dirt, *etc.*
2. Read the plate at a wavelength of 450 nm.

ANALYSIS

Many plate readers come with data reduction software that plot data automatically. Alternatively, a spreadsheet program can be used. The data should be plotted as either %B/B_0 *versus* log concentration using a four-parameter logistic fit or as logit B/B_0 *versus* log concentration using a linear fit. *NOTE: Cayman has a computer spreadsheet available for data analysis. Please contact Technical Service or visit our website (www.caymanchem.com/analysistools/ELISA) to obtain a free copy of this convenient data analysis tool.*

Calculations

Preparation of the Data

The following procedure is recommended for preparation of the data prior to graphical analysis.

NOTE: If the plate reader has not subtracted the absorbance readings of the Blk wells from the absorbance readings of the rest of the plate, be sure to do that now.

1. Average the absorbance readings from the NSB wells.
2. Average the absorbance readings from the B_0 wells.
3. Subtract the NSB average from the B_0 average. This is the corrected B_0 or corrected maximum binding.
4. Calculate the B/B_0 (Sample or Standard Bound/Maximum Bound) for the remaining wells. To do this, subtract the average NSB absorbance from the S1 absorbance and divide by the corrected B_0 (from Step 3). Repeat for S2-S8 and all sample wells. (To obtain %B/B_0 for a logistic four-parameter fit, multiply these values by 100.)

NOTE: The TA values are not used in the standard curve calculations. Rather, they are used as a diagnostic tool. Low or no absorbance from a TA well could indicate a dysfunction in the enzyme-substrate system.

Plot the Standard Curve

Plot %B/B_0 for standards S1-S8 *versus* gentamicin concentration using linear (y) and log (x) axes and perform a four-parameter logistic fit.

Alternative Plot - The data can also be linearized using a logit transformation. The equation for this conversion is shown below. *NOTE: Do not use %B/B_0 in this calculation.*

$$\text{logit } (B/B_0) = \ln [B/B_0/(1 - B/B_0)]$$

Plot the data as logit (B/B_0) *versus* log concentrations and perform a linear regression fit.

Determine the Sample Concentration

Calculate the B/B_0 (or %B/B_0) value for each sample. Determine the concentration of each sample by identifying the %B/B_0 on the standard curve and reading the corresponding values on the x-axis. *NOTE: Remember to account for any dilution of the original sample concentration prior to its addition to the well.* Samples with %B/B_0 values greater than 80% or less than 20% should be re-assayed as they generally fall out of the linear range of the standard curve. A 20% or greater disparity between the apparent concentration of two different dilutions of the same sample could be an indicator of interference, which could be eliminated by purification.

NOTE: If there is an error in the B_0 wells, plot the absorbance values instead of %B/B_0 to calculate sample concentrations.

1 ng/ml of gentamicin = 1 ppb

Performance Characteristics

The standard curve presented here is an example of the data typically produced with this kit; however, your results will not be identical to these. You must run a new standard curve. Do not use the data below to determine the values of your samples.

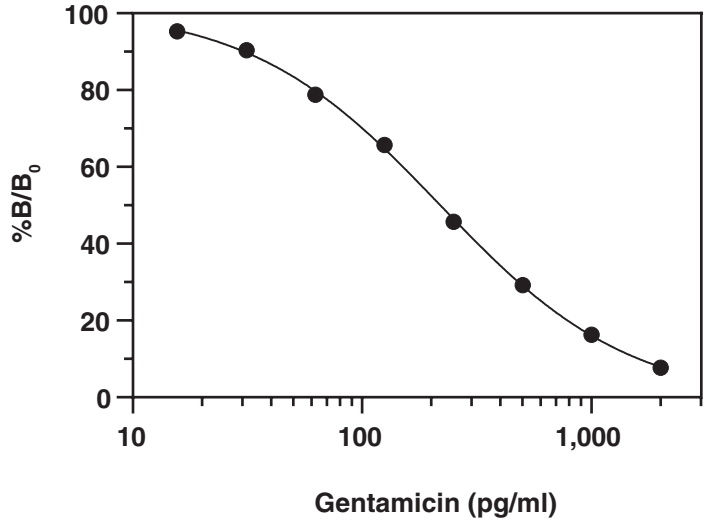
Absorbance at 450 nm

Gentamicin (pg/ml) and Controls	Blk-Subtracted Absorbance	NSB-Corrected Absorbance	%B/B_0	%CV* Intra-Assay Precision	%CV* Inter-Assay Precision
TA		--	--	--	--
NSB	0.022	--	--	--	--
B_0	1.404	1.382	--	--	--
2,000	0.129	0.107	7.7	3.5	5.4
1,000	0.248	0.226	16.3	5.0	6.1
500	0.426	0.404	29.2	3.8	2.0
250	0.653	0.631	45.7	4.3	4.6
125	0.930	0.908	65.7	5.2	6.9
62.5	1.111	1.089	78.8	8.8	9.7
31.3	1.271	1.249	90.4	5.9	17.7
15.6	1.339	1.317	95.3	16.7	32.7**

Table 2. Typical results

*%CV represents the variation in concentration (not absorbance) as determined using a reference standard curve.

**Evaluate data in this range with caution



Assay Range = 15.6-2,000 pg/ml
Sensitivity (defined as 80% B/B_0) = 62 pg/ml
Mid-point (defined as 50% B/B_0) = 219 pg/ml
Lower Limit of Detection (LLOD) = 14 pg/ml

The sensitivity and mid-point were derived from the standard curve shown above. The standard was diluted in Immunoassay Buffer C (1X).

Figure 5. Typical standard curve

Precision:

Intra-assay precision was determined by analyzing 24 replicates of three gentamicin controls (spiked milk samples) in a single assay.

Matrix Control (ng/ml)	%CV
81.5	6.3
39.1	11.4
18.1	6.0

Table 3. Intra-assay precision

Inter-assay precision was determined by analyzing three gentamicin controls (spiked milk samples) in eight separate assays on different days.

Matrix Control (ng/ml)	%CV
107.4	13.0
50.1	13.0
25.5	11.0

Table 4. Inter-assay precision

Cross Reactivity:

Compound	Cross Reactivity
Gentamicin	100%
Streptomycin	<0.01%
Vancomycin	<0.01%
Neomycin	<0.01%
Kanamycin	<0.01%
Amikacin	<0.01%
Dihydrostreptomycin	<0.01%

Table 5. Cross reactivity of the Gentamicin ELISA

RESOURCES

Troubleshooting

Problem	Possible Causes
Erratic values; dispersion of duplicates	A. Trace organic contaminants in the water source B. Poor pipetting/technique
High NSB (>10% of B_0)	A. Poor washing B. Exposure of NSB wells to specific antibody
Very low B_0	A. Trace organic contaminants in the water source B. Dilution error in preparing reagents
Low sensitivity (shift in dose-response)	A. Standard is degraded or contaminated B. Dilution error in preparing standards
Analyses of two dilutions of a biological sample do not agree (*i.e.*, more than 20% difference)	Interfering substances are present
Low signal in sample wells (below range of standard curve)	A. HRP inhibitors present: ensure that samples and buffers are free of HRP inhibitors, such as azide B. Sample requires further dilution
Only TA wells develop	A. Trace organic contaminants in the water source B. The tracer was not added to the wells

References

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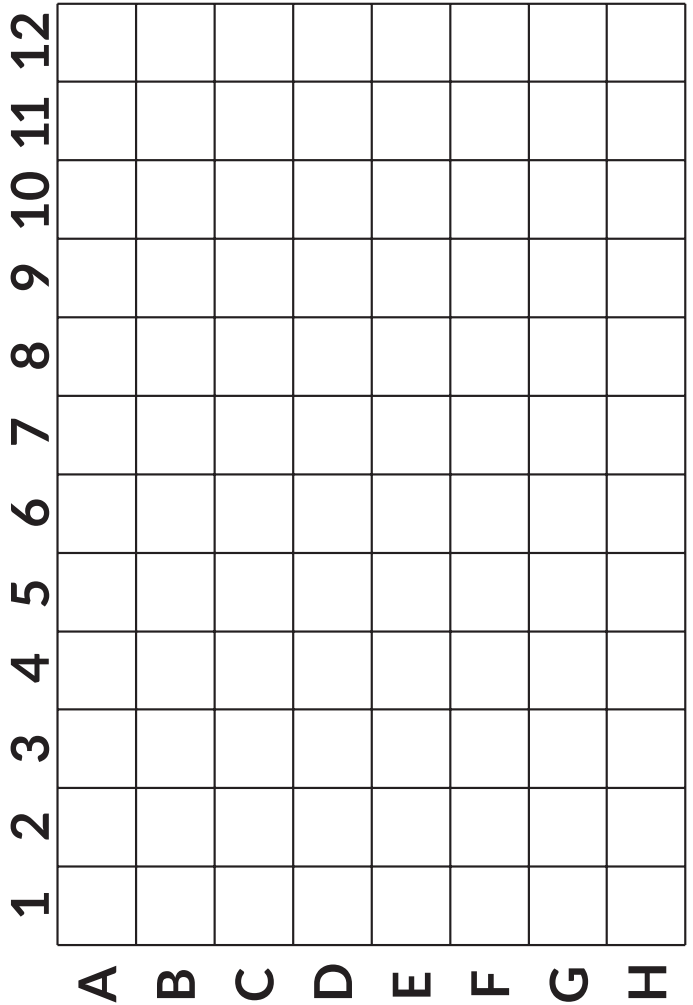
Procedure	Blk	TA	NSB	B_0	Standards/ Samples
Dilute and Mix	Mix all reagents gently				
Pre-Wash the Plate (or strips to be used)	Wash the plate(or strips to be used) 5 x ~ 300 µl with Wash Buffer (1X)				
Add Immunoassay Buffer C (1X)	--	--	100 µl	50 µl	--
Add Standards/Samples	--	--	--	--	50 µl
Add Gentamicin-HRP Tracer	--	--	50 µl	50 µl	50 µl
Add Gentamicin ELISA Monoclonal Antibody	--	--	--	50 µl	50 µl
Incubate	Seal the plate and incubate for 2 hours at room temperature on an orbital shaker				
Wash	Aspirate wells and wash 5 x ~300 µl with Wash Buffer (1X)				
Add TMB Substrate Solution	175 µl				
Add Gentamicin Tracer	--	5 µl	--	--	--
Incubate	Seal the plate and incubate for 30 minutes at room temperature on an orbital shaker protected from light				
Do Not Wash. Add HRP Stop Solution	75 µl				
Read	Read absorbance at 450 nm				

Table 6. Assay summary



NOTES

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