Estrone-3-Glucuronide (E1G) Competitive ELISA Kit

Catalog Number EIA17E3 (96 tests)

Rev 1.0

For safety and biohazard guidelines, see the "Safety" appendix in the *ELISA Technical Guide* (Pub. no. MAN0006706). Read the Safety Data Sheets (SDSs) and follow the handling instructions. Wear appropriate protective eyewear, clothing, and gloves.

Product description

The Estrone-3-Glucuronide (E1G) ELISA Kit is a solid-phase competitive Enzyme-Linked Immunosorbent Assay (ELISA). This assay is designed to detect and quantify the level of estrone-3-glucuronide (E1G) in dried fecal extracts, urine, extracted serum/plasma, and tissue culture media. The assay recognizes estrone-3-glucuronide (E1G) independent of species.

Estrone-3-glucuronide, C24H30O8, (1,3,5(10)-estratrien-3-ol-17-one glucosiduronate, E1G) is the principle secreted form of circulating estradiol in mammals.

Contents and storage

Kits and components are shipped at –20°C. Upon receipt, store the kit at –20°C. Once open, store the kit at 4°C and use within 2 weeks.

Components	Quantity
Estrone-3-Glucuronide (E1G) Standard; 10,000 pg/mL estrone-3-glucuronide (E1G) in a special stabilizing solution	125 µL
Assay Buffer Concentrate (5X)	28 mL
Antibody Coated Wells, 96-well strip-well plate coated with goat anti-rabbit IgG	1 plate
Estrone-3-Glucuronide (E1G) Antibody	3 mL
Estrone-3-Glucuronide (E1G) Conjugate	3 mL
Wash Buffer Concentrate (20X)	30 mL
TMB (Tetramethylbenzidine) Substrate	11 mL
Stop Solution; contains 1 M HCl, **CAUSTIC**	5 mL
Plate Sealer	1

Materials required but not supplied

- Distilled or deionized water
- Microtiter plate reader with software capable of measurement at or near 450 nm (preferably with correction between 570 nm and 590 nm).
- Plate Shaker
- Plate washer–automated or manual (squirt bottle, manifold dispenser, or equivalent)
- Calibrated adjustable precision pipettes and glass or plastic tubes for diluting solution

Procedural guidelines

IMPORTANT! Reagents are lot-specific. Do not mix or interchange different reagent lots from various kit lots.

- Review the **Procedural guidelines** and **Plate washing directions** in the *ELISA Technical Guide* available at **thermofisher.com**.
- Allow reagents to reach room temperature before use. Mix to redissolve any precipitated salts.
- Solutions containing sodium azide will inhibit the activity of the peroxidase conjugate. Ensure that there is no contamination of labware or the plate washer with azide containing solutions.

Prepare 1X Wash Buffer

1. Dilute 15 mL of Wash Solution Concentrate (20X) with 285 mL of deionized or distilled water. Label as 1X Wash Buffer.
2. Store the concentrate and 1X Wash Buffer in the refrigerator. Use the diluted buffer within 3 months.

Prepare 1X Assay Buffer

1. Dilute 14 mL of Assay Buffer (5X) with 56 mL of deionized or distilled water. Label as 1X Assay Buffer.
2. Store the concentrate and 1X Assay Buffer in the refrigerator. 1X Assay Buffer is stable at 4°C for 3 months.

Sample preparation guidelines

- Refer to the *ELISA Technical Guide* at **thermofisher.com** for detailed sample preparation procedures.
- Collect samples in pyrogen/endotoxin-free tubes.
- Freeze samples after collection if samples will not be tested immediately. Avoid multiple freeze-thaw cycles of frozen samples. Thaw completely and mix well (do not vortex) prior to analysis.
- Avoid the use of hemolyzed or lipemic sera.
- If large amounts of particulate matter are present in the sample, centrifuge or filter sample prior to analysis.

Prepare samples

Sample concentrations should be within the range of the standard curve. Because conditions may vary, each investigator should determine the optimal dilution for each application.

Use all samples within **2 hours** of dilution, or store at –20°C or lower until ready to perform assay.

Sample type	Procedure
Serum and plasma	1. Add diethyl ether to serum or plasma samples at a 5:1 (v/v) ether:sample ratio. 2. Mix solutions by vortexing for 2 minutes. Allow ether layer to separate for 5 minutes. 3. Freeze samples in a dry ice/ethanol bath and pipet off the ether solution from the top of the sample into a clean tube. Repeat steps 1-3 for maximum extraction efficiency, combining top layer of ether solutions. 4. Dry pooled ether samples down in a speedvac for 2-3 hrs. If samples need to be stored they should be kept at -20°C. 5. Redissolve samples at room temperature in the Assay Buffer. A minimum of 125 µL of the Assay Buffer is recommended for reconstitution to allow for duplicate sample measurement..
Urine	Dilute samples ≥1:8 with 1X Assay Buffer. **Note**: A Urinary Creatinine Detection Kit (Cat. no. EIACUN) is available for measuring urine creatinine for normalization of estrone-3-glucuronide (E1G) in random urine specimens.
Dried feces	See detailed extraction protocol on the product page at **thermofisher.com** **Note**: The ethanol concentration in the final diluted Assay Buffer dilution added to the well should be <1%.
Tissue culture media	Perform sample dilutions with the corresponding tissue culture medium.

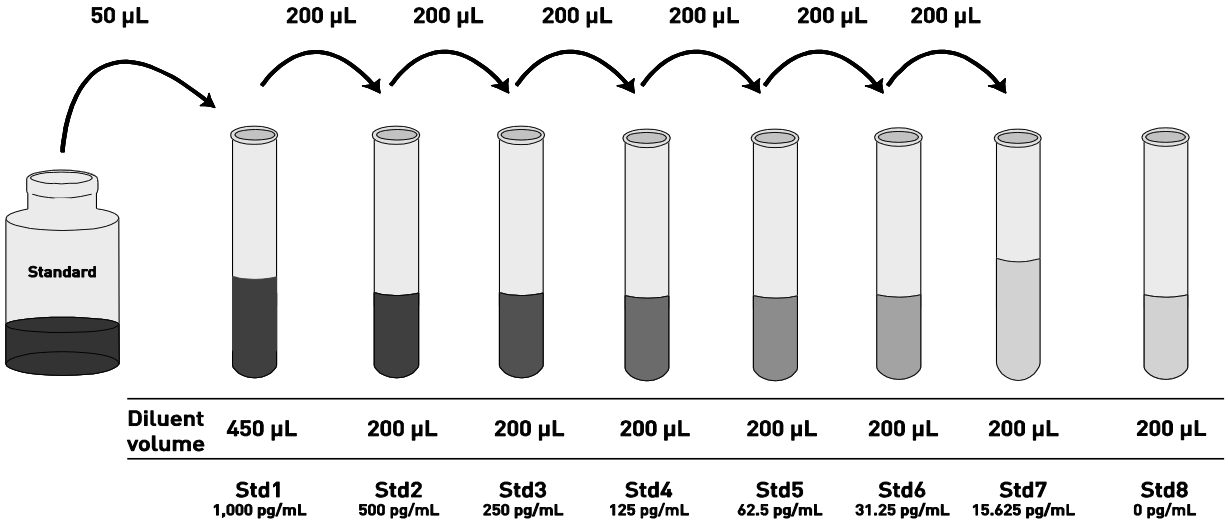
Dilute standards

Note: Use glass or plastic tubes for diluting standards.

Instructions are for diluting standards from 1,000 to 15.625 pg/mL, but a curve can be obtained using a range of 500 to 15.625 pg/mL. Choose the range that fits your sample concentrations most appropriately.

The Estrone-3-Glucuronide (E1G) Standard contains an organic solvent. Pipette the standard up and down several times to wet the pipet tip before transfer to ensure that volumes are accurate.

1. Add 50 µL Estrone-3-Glucuronide (E1G) Standard to one tube containing 450 µL 1X Assay Buffer and label as 1,000 pg/mL estrone-3-glucuronide (E1G).
2. Add 200 µL 1X Assay Buffer to each of 7 tubes labeled as follows: 500, 250, 125, 62.5, 31.25, 15.625, and 0 pg/mL estrone-3-glucuronide (E1G).
3. Make serial dilutions of the standard as described below in the dilution diagram. Mix thoroughly between steps.
4. **Use the standards within 2 hours of preparation**.

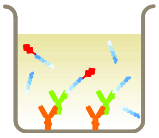


Perform ELISA (Total assay time: 2.5 hours)

IMPORTANT! Perform a standard curve with each assay.

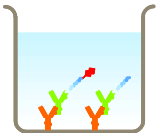
Allow all components to reach room temperature before use. Mix all liquid reagents prior to use.

Determine the number of 8-well strips required for the assay. Insert the strips in the frames for use. Re-bag any unused strips and frames, and store desiccated at 2°C to 8°C for future use. The silica pack in the bag keeps the plate dry, and turns from blue to pink if the bag is not properly sealed.



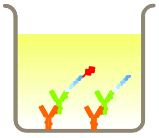
Bind antigen

a. Add 50 µL of standards or samples (see "Prepare samples" on page 2) to the appropriate wells.
b. Add 75 µL of 1X Assay Buffer into wells for detecting non-specific binding (NSB).
c. Add 25 µL of Estrone-3-Glucuronide (E1G) Conjugate to each well.
d. Add 25 µL of Estrone-3-Glucuronide (E1G) Antibody to each well except NSB wells.
e. Tap the side of the plate to mix. Cover the plate with plate sealer and incubate for 2 hours at room temperature with shaking.
   Note: If the plate is not shaken the bound of the signals will be ~35% lower.
f. Thoroughly aspirate the solution and wash wells 4 times with 300 µL of 1X Wash Buffer.



Add chromogen

a. Add 100 µL TMB Substrate to each well. The substrate solution will begin to turn blue.
b. Incubate for 30 minutes at room temperature without shaking.
   Note: TMB should not touch aluminum foil or other metals.



Add stop solution

Add 50 µL Stop Solution to each well. Tap side of the plate gently to mix. The solution in the wells changes from blue to yellow.

Read the plate and generate the standard curve

1. Read the absorbance at 450 nm. Read the plate within 2 hours after adding the Stop Solution.
2. Use curve-fitting software to generate the standard curve. A four parameter algorithm provides the best standard curve fit. Optimally, the background absorbance may be subtracted from all data points, including standards, unknowns and controls, prior to plotting.
3. Read the concentrations for unknown samples and controls from the standard curve. Multiply value(s) obtained for sample(s) by the appropriate factor to correct for the sample dilution.
   Note: Dilute samples producing signals lower than that of the highest standard in 1X Assay Buffer and reanalyze. Multiply the concentration by the appropriate dilution factor.

Performance characteristics

Standard curve (example)

The following data were obtained for the various standards over the range of 0–1,000 pg/mL estrone-3-glucuronide (E1G).

Standard Estrone-3-Glucuronide (E1G) (pg/mL)	Optical Density (450 nm)*
1,000	0.167
500	0.265
250	0.425
125	0.686
62.5	1.006
31.25	1.298
15.625	1.491
0	1.645

Note: The NSB gave a Mean OD value of 0.042.

Intra-assay precision

Samples were assayed in replicates of 20 to determine precision within an assay.

Parameters	Sample 1	Sample 2	Sample 3
Mean (pg/mL)	241.1	70.7	39.9
%CV	3.1	3.5	4.7

CV = Coefficient of Variation

Inter-assay precision

Samples were assayed in duplicates in 10 assay runs by four operators to determine precision between assays.

Parameters	Sample 1	Sample 2	Sample 3
Mean (pg/mL)	252.8	70.7	38.9
%CV	4.7	5.9	6.3

CV = Coefficient of Variation

Performance characteristics, continued

Expected values

Ten urine samples from various species were tested in the assay. Adjusted neat concentrations of Estrone-3-Glucuronide (E1G) ranged from 0.831 to 19.3 ng/mL. When adjusted for urine creatinine using the Urinary Creatinine Detection kit, EIACUN, the values ranged from 7.08 to 732.7 ng/mg creatinine.

Recovery

Recovery was determined by taking two urine samples diluted 1:20 with Assay Buffer, one with a low diluted estrone-3-glucuronide (E1G) level of 390.2 pg/mL and one with a higher diluted level of 701.1 pg/mL, and mixing them in the ratios given below. The measured concentrations were compared to the expected values based on the ratios used.

High Sample %	Low Sample %	Expected Conc. (pg/mL)	Observed Conc. (pg/mL)	% Recovery
80	20	638.9	643.0	100.6
60	40	576.7	563.0	97.6
40	60	514.5	457.4	88.9
20	80	452.4	406.5	88.9
			Mean Recovery	**94.3%**

Specificity

The following cross reactants were tested in the assay and calculated at the 50% binding point.

Steroid	Cross-reactivity %
Estrone-3-glucuronide (E1G)	100
Estrone-3-Sulfate (E1S)	66.6
Estrone	238
17ß-Estradiol	7.8
Estradiol-3-Glucuronide	3.8
Estradiol-3-Sulfate	3.3
Estradiol-17-Sulfate	0.1
Progesterone	<0.1
Estriol	<0.1
Cortisol	<0.1
Testosterone	<0.1
Pregnanediol	<0.1

Sensitivity

The analytical sensitivity of estrone-3-glucuronide (E1G) is 7.38 pg/mL. This was determined by adding two standard deviations to the mean O.D. obtained when the zero standard was assayed 20 times, and calculating the corresponding concentration.

Limited product warranty

Life Technologies Corporation and/or its affiliate(s) warrant their products as set forth in the Life Technologies' General Terms and Conditions of Sale found on Life Technologies' website at **www.thermofisher.com/us/en/home/global/terms-and-conditions.html**. If you have any questions, please contact Life Technologies at **www.thermofisher.com/support**.

Catalog Number

Batch code


Temperature limitation


Use by


Manufacturer


Consult instructions for use


Caution, consult accompanying documents

Manufacturer's address: Life Technologies Corporation | 7335 Executive Way | Frederick, MD 21704 | USA

The information in this guide is subject to change without notice.

DISCLAIMER

TO THE EXTENT ALLOWED BY LAW, LIFE TECHNOLOGIES AND/OR ITS AFFILIATE(S) WILL NOT BE LIABLE FOR SPECIAL, INCIDENTAL, INDIRECT, PUNITIVE, MULTIPLE, OR CONSEQUENTIAL DAMAGES IN CONNECTION WITH OR ARISING FROM THIS DOCUMENT, INCLUDING YOUR USE OF IT.

Important Licensing Information: These products may be covered by one or more Limited Use Label Licenses. By use of these products, you accept the terms and conditions of all applicable Limited Use Label Licenses.

Corporate entity: Life Technologies Corporation | Carlsbad, CA 92008 USA | Toll Free in USA 1 800 955 6288