Version 27-08/25

User's Manual

Pregnanediol-3-Glucuronide (PDG) ELISA Kit

REF **DEIABL255**

Σ **96T**

RUO

This product is for research use only and is not intended for diagnostic use.

For illustrative purposes only. To perform the assay the instructions for use provided with the kit have to be used.

Creative Diagnostics

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PRODUCT INFORMATION

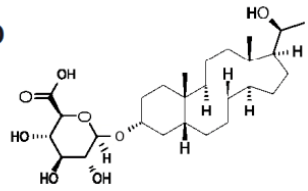
Intended Use

The Pregnanediol-3-Glucuronide (PDG) Immunoassay kit uses a specifically generated antibody to measure PDG and its metabolites in urine and fecal samples, or in extracted serum and plasma. This kit is not recommended for serum, plasma, or saliva samples without extraction. The kit will quantitatively measure PDG present in diluted buffer samples and tissue culture media samples.

General Description

Pregnanediol Glucuronide, $C_7H_{44}O_8$, also known as PDG (5β-Pregnan-3a,20a-diol 3-glucosiduronate) is the major metabolite of progesterone[1-4]. Progesterone is the hormone involved in the female menstrual cycle, gestation and embryogenesis of humans and other species. Progesterone belongs to a class of hormones called progestogens, and is the major naturally occurring human progestogen[5,6]. Progesterone is an essential regulator of human female reproductive function in the uterus, ovary, mammary gland and brain, and plays an important role in non-reproductive tissues such as the cardiovascular system, bone and the central nervous system. Progesterone action is conveyed by two isoforms of the nuclear progesterone receptor (PR), PRA and PRB. PRA and B are expressed in a variety of normal breast tissue from humans, rats and mice and is also expressed in breast cancer cells[7,8]. Progesterone also has neurotrophic roles in the peripheral nervous system as it activates the growth and maturation of axons and stimulates the repair and replacement of myelin sheaths in regenerating nerve fibres[9].

Pregnanediol-3-Glucuronide, PD



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9. Koenig, HL, Gong, WH and Pelissier, P., "Role of progesterone in peripheral nerve repair." Revs. of Reprod., 2000; 5:189-199.

Principles of Testing

The Pregnanediol-3-Glucuronide (PDG) Immunoassay Kit uses a speciffcally generated antibody to measure PDG and its metabolites in urine and fecal samples, or in extracted serum and plasma. This kit is not recommended for serum, plasma, or saliva samples without extraction. The kit will quantitatively measure PDG present in diluted buffer samples and tissue culture media samples. Please read the complete kit insert before performing this assay. A PDG standard is provided to generate a standard curve for the assay and all samples should be read off the standard curve. Standards or diluted samples are pipetted into a clear microtiter plate coated with an antibody to capture rabbit antibodies. A PDG-peroxidase conjugate is added to the standards and samples in the wells. The binding reaction is initiated by the addition of a polyclonal antibody to PDG to each well. After a 2 hour incubation the plate is washed and substrate is added. The substrate reacts with the bound PDG-peroxidase conjugate. After a short incubation, the reaction is stopped and the intensity of the generated color is detected in a microtiter plate reader capable of measuring 450 nm wavelength. The concentration of the PDG in the sample is calculated, after making suitable correction for the dilution of the sample, using software available with most plate readers.

Reagents And Materials Provided

1. Coated Clear 96 Well Plates

Clear 1 by 8 break-apart strip well plastic microtiter plate(s) coated with goat anti-rabbit IgG.

2. Pregnanediol-3-Glucuronide (PDG) Standard

Pregnanediol-3-Glucuronide (PDG) at 500 ng/mL in a special stabilizing solution. 125 µL

3. Pregnanediol-3-Glucuronide (PDG) Antibody

A rabbit polyclonal antibody speciffc for Pregnanediol-3-Glucuronide. 3 mL

4. Pregnanediol-3-Glucuronide (PDG) Conjugate

Pregnanediol-3-Glucuronide-peroxidase conjugate in a special stabilizing solution. 3 mL

5. Assay Buffer Concentrate

A 5× concentrate that should be diluted with deionized or distilled water. 28 mL

6. Wash Buffer Concentrate

A 20× concentrate that should be diluted with deionized or distilled water. 30 mL

7. TMB Substrate. 11 mL

8. Stop Solution

A 1M solution of hydrochloric acid. CAUSTIC. 5 mL

9. Plate Sealer

Materials Required But Not Supplied

Distilled or deionized water.

Repeater pipet with disposable tips capable of dispensing 25, 50 and 100 µL.

A microplate shaker.

Colorimetric 96 well microplate reader capable of reading optical density at 450 nm.

Software for converting raw relative optical density readings from the plate reader and carrying out four parameter logistic curve (4PLC) fitting. Contact your plate reader manufacturer for details.

Storage

All components of this kit should be stored at 4°C until the expiration date of the kit.

Specimen Collection And Preparation

SAMPLE TYPES

This assay has been validated for dried fecal, urine and tissue culture samples. Samples containing visible particulate should be centrifuged prior to using.

Pregnanediol-3-glucuronide (PDG) is identical across all species and we expect this kit to measure pregnanediol-3-glucuronide from all sources. The end user should evaluate recoveries of PDG in other sample matrices being tested.

SAMPLE PREPARATION

Serum and Plasma Samples

We would recommend the following protocol for 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.

Dried Fecal Samples

We have a detailed Extraction Protocol. The ethanol concentration in the final Assay Buffer dilution added to the well should be ≤ 1%.

Urine Samples

Urine samples should be diluted at least 1:5 with the provided Assay Buffer.

Tissue Culture Media

For measuring pregnanediol-3-glucuronide in tissue culture media (TCM), samples should be read off a standard curve generated in TCM. Samples may need to be diluted further in TCM.

Use all samples within 2 hours of preparation.

Reagent Preparation

Allow the kit reagents to come to room temperature for 30 minutes. Ensure that all samples have reached room temperature and have been diluted as appropriate prior to running them in the kit.

1. Assay Buffer

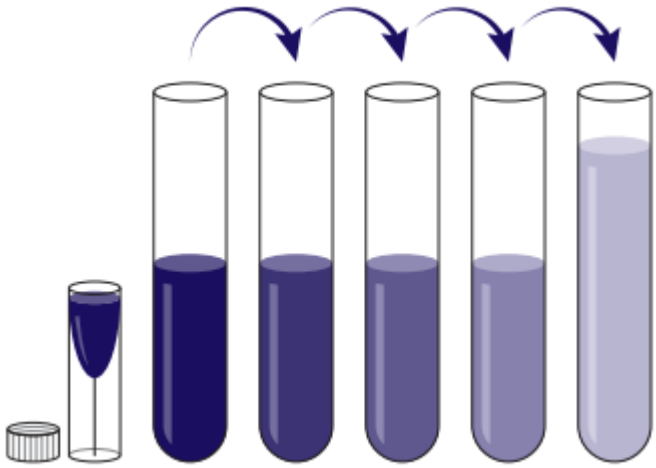
Dilute Assay Buffer Concentrate 1:5 by adding one part of the concentrate to four parts of deionized water. Once diluted this is stable at 4°C for 3 months.

2. Wash Buffer

Dilute Wash Buffer Concentrate 1:20 by adding one part of the concentrate to nineteen parts of deionized water. Once diluted this is stable at room temperature for 3 months.

3. Standard Preparation

Label test tubes as #1 through #8. Pipet 450 µL of Assay Buffer into tube #1 and 200 µL into tubes #2 to #8. The Pregnanediol-3-Glucuronide stock solution contains an organic solvent. Prerinse the pipet tip several times to ensure accurate delivery. Carefully add 50 µL of the pregnanediol-3-glucuronide stock solution to tube #1 and vortex completely. Take 200 µL of the pregnanediol-3-glucuronide solution in tube #1 and add it to tube #2 and vortex completely. Repeat the serial dilutions for tubes #3 through #8. The concentration of pregnanediol-3-glucuronide in tubes 1 through 8 will be 50, 25, 12.5, 6.25, 3.125, 1.563, 0.781 and 0.391 ng/mL. **Use all Standards within 2 hours of preparation.**



	Std 1	Std 2	Std 3	Std 4	Std 5	Std 6	Std 7	Std 8
Assay Buffer (µL)	**450**	200	200	200	200	200	200	200
Addition	Stock	Std 1	Std 2	Std 3	Std 4	Std 5	Std 5	Std 6
Vol of Addition (µL)	**50**	200	200	200	200	200	200	200
Final Conc (ng/mL)	50	25	12.5	6.25	3.125	1.563	0.781	0.391

Assay Procedure

We recommend that all standards and samples be run in duplicate to allow the end user to accurately determine pregnanediol-3-glucuronide concentrations.

1. Use the plate layout sheet on the back page to aid in proper sample and standard identification. Determine

the number of wells to be used and return unused wells to the foil pouch with desiccant. Ensure the desiccant is blue. Seal the ziploc plate bag and store at 4°C.

2. Pipet 50 µL of samples or standards into wells in the plate.
3. Pipet 50 µL of Assay Buffer into the maximum binding (B0 or Zero standard) wells.
4. Pipet 75 µL of Assay Buffer into the non-specific binding (NSB) wells.
5. Add 25 µL of the Pregnanediol-3-Glucuronide Conjugate to each well using a repeater pipet.
6. Add 25 µL of the Pregnanediol-3-Glucuronide Antibody to each well, except the NSB wells, using a repeater pipet.
7. Gently tap the sides of the plate to ensure adequate mixing of the reagents. Cover the plate with the plate sealer and shake at room temperature for 2 hours. We recommend shaking at around 700–900 rpm. If the plate is not shaken signals bound will be approximately 35% lower.
8. Aspirate the plate and wash each well 4 times with 300 µL wash buffer. Tap the plate dry on clean absorbent towels.
9. Add 100 µL of the TMB Substrate to each well, using a repeater pipet.
10. Incubate the plate at room temperature for 30 minutes without shaking.
11. Add 50 µL of the Stop Solution to each well, using a repeater pipet.
12. Read the optical density generated from each well in a plate reader capable of reading at 450 nm.
13. Use the plate reader's built-in 4PLC software capabilities to calculate pregnanediol-3-glucuronide concentration for each sample.

NOTE: If you are using only part of a strip well plate, at the end of the assay throw away the used wells and retain the plate frame for use with the remaining unused wells.

Calculation

Average the duplicate OD readings for each standard and sample. Create a standard curve by reducing the data using the 4PLC fitting routine on the plate reader, after subtracting the mean OD's for the NSB. The sample concentrations obtained, calculated from the %B/B0 curve, should be multiplied by the dilution factor to obtain neat sample values.

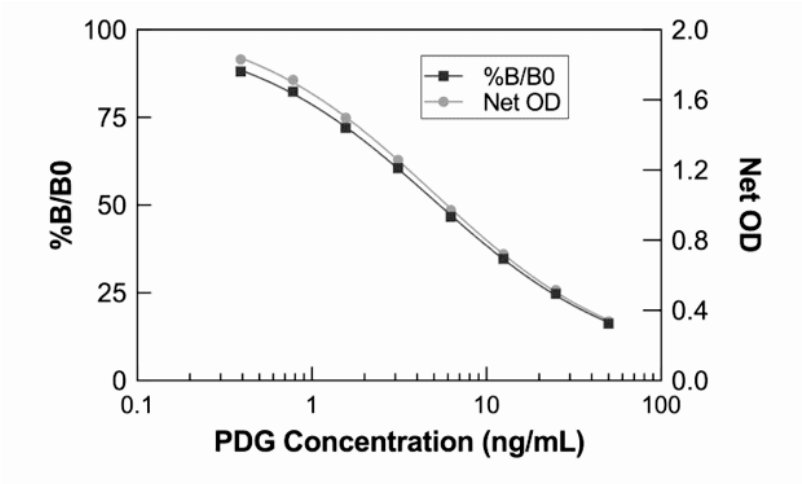
TYPICAL DATA

Sample	Mean OD	Net OD	% B/B0	PDG Conc. (ng/mL)
NSB	0.086	0	---	-
Standard 1	0.424	0.338	16.3	50
Standard 2	0.602	0.516	24.8	25
Standard 3	0.807	0.721	34.7	12.5
Standard 4	1.058	0.972	46.7	6.25
Standard 5	1.344	1.258	60.5	3.125
Standard 6	1.583	1.497	72.0	1.563
Standard 7	1.800	1.714	82.4	0.781
Standard 8	1.917	1.831	88.1	0.391
B0	2.166	2.080	100	0
Sample 1	1.124	1.038	49.9	5.4
Sample 2	1.509	1.423	68.4	2.0

Always run your own standard curve for calculation of results. Do not use this data.

Conversion Factor: 100 pg/mL of PDG is equivalent to 201.4 pM.

Typical Standard Curve



Always run your own standard curves for calculation of results. Do not use this data.

Precision

Intra Assay Precision

Three urine samples were diluted with Assay Buffer and run in replicates of 20 in an assay. The mean and precision of the calculated pregnanediol-3-glucuronide (PDG) concentrations were:

Sample	PDG Conc. (ng/mL)	%CV
1	12.5	2.9
2	4.0	3.7
3	1.5	5.7

Inter Assay Precision

Three urine samples were diluted with Assay Buffer and run in duplicates in fourteen assays run over multiple days by three operators. The mean and precision of the calculated pregnanediol-3-glucuronide (PDG) concentrations were:

Sample	PDG Conc. (ng/mL)	%CV
1	12.3	6.4
2	3.9	5.2
3	1.3	7.5

Sensitivity

Sensitivity was calculated by comparing the OD's for twenty wells run for each of the B0 and standard #8. The detection limit was determined at two (2) standard deviations from the B0 along the standard curve. Sensitivity was determined as 0.180 ng/mL.

The Limit of Detection for the assay was determined in a similar manner by comparing the OD's for twenty runs for each of the zero standard and a low concentration human urine sample. Limit of Detection was determined as 0.320 ng/mL

Specificity

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

Pregnanediol-3-glucuronide 100%

20a -hydroxyprogesterone 44.8%

20β -hydroxyprogesterone 3.16%

Progesterone 0.2%

Testosterone 0.2%

Cortisol 0.07%

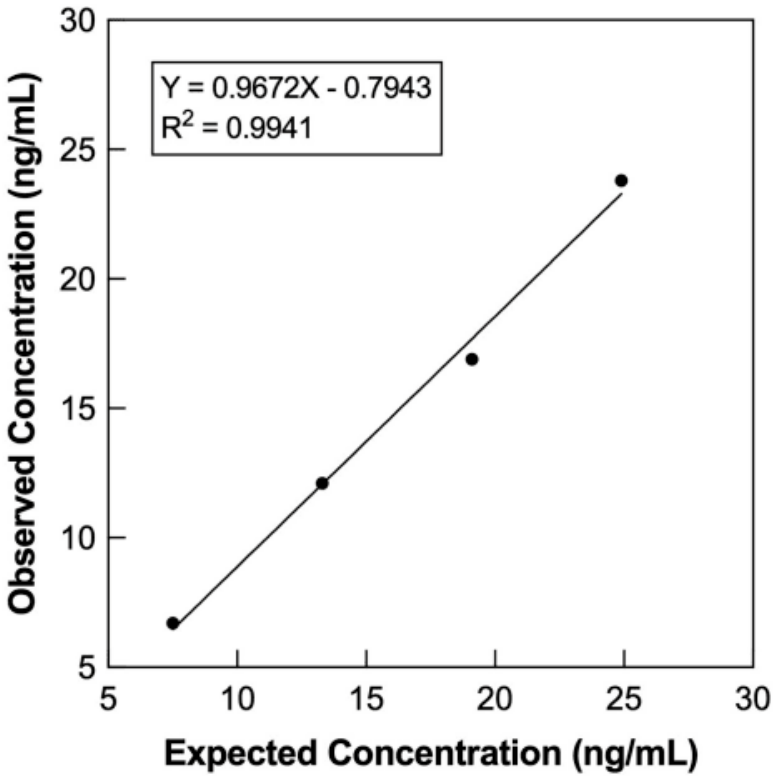
17β -Estradiol 0.07%

Estrone-3-glucuronide 0.07%

Linearity

Linearity was determined by taking two urine samples diluted with Assay Buffer, one with a low diluted pregnanediol-3-glucuronide (PDG) level of 1.70 ng/mL and one with a higher diluted level of 30.7 ng/mL, and mixing them in the ratios given below. The measured concentrations were compared to the expected values based on the ratios used.

High Urine	Low Urine	Expected Conc. (ng/mL)	Observed Conc. (ng/mL)	% Recovery
80%	20%	24.9	23.8	95.4
60%	40%	19.1	16.9	88.3
40%	60%	13.3	12.1	90.7
20%	80%	7.5	6.7	89.1
			Mean Recovery	**90.9%**



Precautions

As with all such products, this kit should only be used by qualified personnel who have had laboratory safety instruction. The complete insert should be read and understood before attempting to use the product.

The antibody coated plate needs to be stored desiccated. The silica gel pack included in the foil ziploc bag will keep the plate dry. The silica gel pack will turn from blue to pink if the ziploc has not been closed properly.This kit utilizes a peroxidase-based readout system. Buffers, including other manufacturers' Wash Buffers, containing sodium azide will inhibit color production from the enzyme. Make sure all buffers used for samples are azide free. Ensure that any plate washing system is rinsed well with deionized water prior to using the supplied Wash Buffer.

The Stop Solution is acid. The solution should not come in contact with skin or eyes. Take appropriate precautions when handling this reagent.