Version 25-05/24

User's Manual

Synthetic Cannabinoids (JWH-250) ELISA Kit

REF **DEIA-XYZ229**

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

For the determination of trace quantities of synthetic cannabinoids and metabolites in human blood, serum, and urine.

General Description

Creative Diagnostics's Synthetic Cannabinoids (JWH-250) RTU ELISA Kit is a qualitative one-step kit designed for use as a screening device for the detection of JWH-250, JWH-018, JWH-073, JWH-200, JWH-203, RCS-8, AM2201, and other synthetic cannabinoid metabolites. The kit was designed for screening purposes and is intended for research use only. It is recommended that all suspect samples be confirmed by a quantitative method such as gas chromatography/mass spectrometry (GC/MS).

Principles of Testing

Creative Diagnostics's test kit operates on the basis of competition between the drug or its metabolite in the sample and the drug-enzyme conjugate for a limited number of antibody binding sites. First, the sample or control is added to the microplate. Next, the drug-enzyme conjugate is added and the mixture is incubated at room temperature. During this incubation, the drug in the sample or the drug-enzyme conjugate binds to antibody immobilized in the microplate wells. After incubation, the plate is washed to remove any unbound sample or drug-enzyme conjugate. The presence of bound drug-enzyme conjugate is recognized by the addition of Substrate (TMB). After a 30 minute substrate incubation, the reaction is halted with the addition of an acid stop. The test can be read visually or with a microplate reader equipped with a 450 nm filter. The extent of color development is inversely proportional to the amount of drug in the sample or control. In other words, the absence of the drug in the sample will result in a dark yellow color, whereas the presence of the drug will result in light yellow to no color development.

Reagents And Materials Provided

1. **EIA Buffer:** 30 mL (ready to use). Phosphate buffered saline solution with bovine serum and a preservative. Provided for dilution of samples.
2. **Wash Buffer Concentrate (10×):** 20 mL. Phosphate buffered saline solution with a surfactant. Dilute 10 fold with deionized or ultrapure water before use. Diluted wash buffer is used to wash all unbound conjugate and samples from the plate after the conjugate incubation.
3. **Substrate:** 20 mL (ready to use). Stabilized 3,3',5,5' Tetramethylbenzidine (TMB) plus hydrogen peroxide (H_2O_2) in a single bottle. It is used to develop the color in the wells after washing. Light sensitive.
4. **Drug-Enzyme Conjugate:** 14 mL (ready to use). Drug-horseradish peroxidase conjugate. Do Not Dilute.
5. **Antibody Coated Plate:** A 96 well Costar plate, in strips of 8 break-away wells, coated with anti-drug antiserum. The plate is ready for use as is.
6. **Acid Stop Solution:** 14 mL (ready to use). 1N H_2SO_4 used to stop the enzyme reaction.
7. **Qualitative QC Positive Control:** 750 µL provided (JWH-018 pentanoic acid in synthetic human urine). Do not dilute.

8. **Qualitative QC Negative Control:** 750 µL provided (synthetic human urine). Do not dilute.

Materials Required But Not Supplied

1. Deionized water.
2. Precision pipettes that range from 10 µL - 1000 µL and disposable tips.
3. Graduated cylinder to dilute and mix wash buffer.
4. Plate cover or plastic film to cover plate during incubation.
5. Clean glassware (i.e. test tubes) to dilute samples.
6. Microplate reader with 450 nm filter.
7. Cut-off calibrator.

Storage

This kit can be used until the expiration date on the label when stored refrigerated at 2-8°C.

Specimen Collection And Preparation

Recommended minimum sample dilutions are listed below. These dilutions may change based on your laboratory's determination. All sample dilutions should be made in Creative Diagnostics's EIA Buffer.

a. **Urine:** A dilution of 1:10 (i.e. 1 part sample to 9 parts provided EIA buffer) is required for optimal assay performance. Please contact Creative Diagnostics for assistance.

b. **Whole blood and Serum:** A dilution of 1:5 (i.e. 1 part sample to 4 parts provided EIA buffer) is required for optimal assay performance. Please contact Creative Diagnostics for assistance.

c. **Other sample types:** Please contact Creative Diagnostics for assistance.

Assay Procedure

The following test procedures can be run manually or on an automated instrument. Please contact Creative Diagnostics for assistance with protocols for automated instruments.

1. Determine the number of wells to be used.
2. Gently mix the ready to use conjugate solution by inversion. Do not vortex. Store unused conjugate at 2-8°C.
3. Choose the appropriate Creative Diagnostics calibrators to be used with your sample type. Do not dilute the calibrators provided by Creative Diagnostics.
4. **For Whole blood and Serum:**

   a. Add 20 µL of sample, Creative Diagnostics calibrators or laboratory calibrators to the appropriate wells in duplicate.

   b. Add 100 µL of the ready to use drug-enzyme conjugate to each well. For manual runs use the 8-channel pipettor or 12-channel pipettor for rapid addition.

   For Urine Samples:

a. Add 50 µL of sample, Creative Diagnostics calibrators or laboratory calibrators to the appropriate wells in duplicate.

Add 100 µL of the ready to use drug-enzyme conjugate to each well. For manual runs use the 8-channel pipettor or 12-channel pipettor for rapid addition.

5. For manual runs, mix by gently shaking plate. A microplate shaker may be used.
6. Cover plate with plastic film or plate cover and incubate at room temperature for 45 minutes.
7. During the conjugate incubation, dilute concentrated wash buffer 10 fold with deionized water (i.e. 20 mL of concentrated wash buffer plus 180 mL of deionized water). Mix thoroughly. Diluted wash buffer is stable for 5 days at room temperature or 7 days at 2-8°C.
8. Once the incubation is complete, dump or aspirate the liquid from the wells. Tap the plate on a clean lint-free towel to remove any remaining liquid in the wells.
9. Wash each well with 300 µL of diluted wash buffer. **Manual Wash:** For manual wash procedures repeat for a total of 3 washings, invert and tap dry the plate following each step. After completing the last wash step wipe the bottom of the wells with a lint-free towel to remove any liquid on the outside of the wells. **Automated Wash:** If an automated plate washer is used wash the plate for a total of 5 washings with 300 µ L of diluted wash buffer. It is important for the automated washer to conduct a final aspirate cycle to eliminate residual amounts of wash buffer. Residual amounts of buffer in the wells will affect assay performance. Note: DI water should never be used for the plate wash.
10. Add 100 µL of the Substrate to each well. For manual runs, use a multi-channel pipetter for best results.
11. Incubate at room temperature for 30 minutes.
12. Add 100 µL of the Acid Stop (1N H_2SO_4) to each well to stop enzyme reaction. Mix gently before measuring the absorbance. For automated systems a 10 second shake is sufficient. Measure the absorbance at a wavelength of 450 nm. Wells should be read within 2 hours of stopping the reaction.

NOTES

1. Desiccant bag must remain in foil pouch with unused strips. Keep ziplock pouch sealed when not in use to maintain a dry environment.
2. Use clean pipette tips for the buffer, drug-enzyme conjugate, controls and samples.
3. Before pipetting a reagent, rinse the pipette tip three times with that reagent.
4. When pipetting into the wells, **DO NOT** allow the pipette tip to touch the inside of the well or any of the reagent already inside the well. This may result in cross contamination.
5. Controls and samples should be assayed in duplicate.
6. Before substrate addition, wipe the outside bottom of the wells with a lint-free wiper to remove dust and fingerprints.
7. Gently mix specimens and reagents before use. Avoid vigorous agitation.

Interpretation Of Results

Each laboratory should determine the cutoff level for their individual application. When possible, cutoff calibrators and/or standards should be prepared in the same matrix being tested.

Positive Result: Samples with an absorbance less than or equal to the laboratory's designated cutoff calibrator should be considered positive. All positive samples should be confirmed by a quantitative method

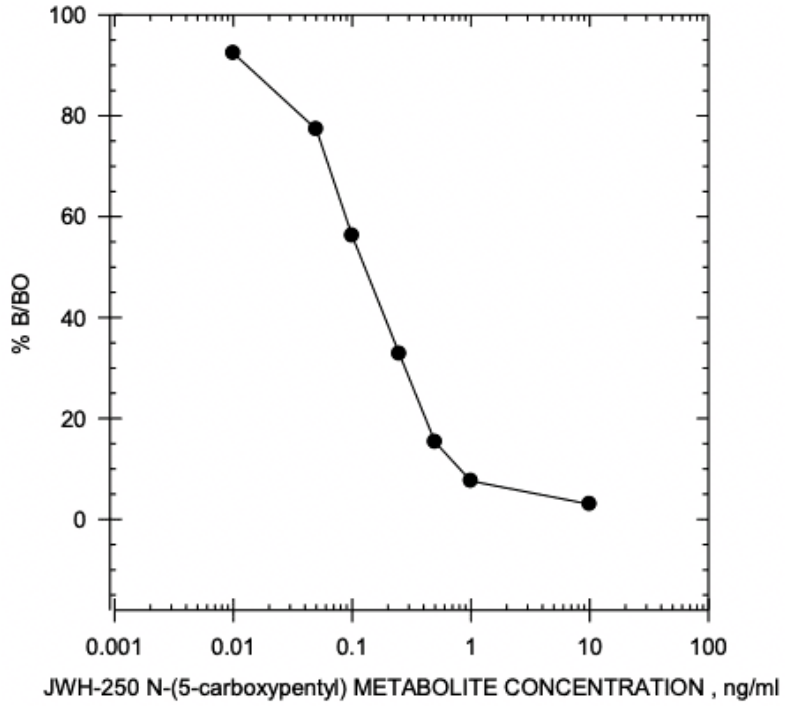
such as GC/MS.

Negative Result: Samples with an absorbance greater than the laboratory's designated cutoff calibrator should be considered negative.

Qualitative QC Controls: The Creative Diagnostics positive and negative controls provided in the kit are for QC purposes only. The sole purpose of these controls is to verify that the test kit is performing properly. The controls are not intended for use as cutoff calibrators. The positive control is spiked at a high concentration and its approximate level can be found on the label.

Note: The kit was designed for screening purposes only. It is recommended that all suspect samples be confirmed by a quantitative method such as GC/MS or HPLC.

Typical Standard Curve



Sensitivity

Compound	I-50 in EIA Buffer
JWH-250	0.395 ng/mL

The term I-50 is used to define the sensitivity of the test. This number is derived from a standard curve generated with the drug in EIA Buffer. The drug concentration that shows 50% less color activity than the zero standard is considered to be the I-50.

Specificity

Compound	Compound Concentration I-50 (ng/mL)	JWH-250 Equivalents (ng/mL)	% Cross-Reactivity
JWH-250	0.40	0.395	100
JWH-250 N-(5-carboxypentyl) metabolite	0.25	0.395	159.9
JWH-250 N-(5-hydroxypentyl) metabolite	0.25	0.395	158
JWH-250 N-(4-hydroxypentyl) metabolite	0.32	0.395	123.4
JWH-073 N-(4-hydroxybutyl) metabolite	0.37	0.395	106.8
JWH-018 N-(5-hydroxypentyl) metabolite	0.37	0.395	103.9
JWH-073	0.42	0.395	94.1
(+)-JWH-018 N-(4-hydroxypentyl) metabolite	0.44	0.395	89.8
AM 2232	0.44	0.395	89.8
AM 1220	0.46	0.395	85.9
JWH-200	0.47	0.395	84
JWH-203	0.53	0.395	74.5
JWH-018 N-pentanoic acid	0.62	0.395	63.7
JWH-018 N-(5-hydroxypentyl) β-D-glucuronide	0.67	0.395	59
JWH-015	0.67	0.395	59
JWH-250 5-hydroxyindole metabolite	0.72	0.395	54.9
AM 2201	0.74	0.395	53.4
JWH-073 N-butanoic acid metabolite	0.75	0.395	52.7
JWH-022	0.85	0.395	46.5
JWH-018	1.2	0.395	32.9
AM 2201 6-hydroxyindole metabolite	1.2	0.395	32.9
RCS-8	1.2	0.395	32.9
MAM 2201	1.3	0.395	30.4
THJ-2201	1.65	0.395	24
PB-22 N-(5-hydroxypentyl) metabolite	1.7	0.395	23.2
JWH-018 6-hydroxyindole metabolite	1.9	0.395	20.8
5-fluoro PB -22	2.1	0.395	18.8
PB-22 N-(4-hydroxypentyl) metabolite	2.1	0.395	18.8
1' Napthoyl Indole	2.2	0.395	18
JWH-018 5-hydroxyindole metabolite	2.5	0.395	15.8
PB-22 N-pentanoic acid	2.8	0.395	14.1
JWH -019	2.9	0.395	13.6
THJ -018	2.94	0.395	13.4
JWH -007	3.5	0.395	11.3
PB -22	3.63	0.395	10.9
JWH-018 4-hydroxyindole metabolite	4	0.395	9.9
JWH -122	4.1	0.395	9.6
(+) WIN 55212 -2 (mesylate)	4.75	0.395	8.3
JWH-081	5.75	0.395	6.9
BB-22	6.22	0.395	6.4
AM 2201 N-(4-hydroxypentyl) metabolite	6.8	0.395	5.8
JWH -398	9	0.395	4.4
JWH -210	30	0.395	1.3
AM 694	39	0.395	1
RCS-4 N-(5-hydroxypentyl) metabolite	52.5	0.395	0.8
RCS-4	57.5	0.395	0.7
MMB-FUBINACA	98.8	0.395	0.4
XLR11 N-(4-hydroxybutyl) metabolite	3150	0.395	0.01
(±)-CP 47,497-C8 homolog	> 10,000	0.395	<0.004
(-) -CP 47,497	> 10,000	0.395	<0.004
(±)-CP 47,497 C-7 hydroxy metabolite	> 10,000	0.395	<0.004
UR -144	> 10,000	0.395	<0.004
UR-144 N-(5-hydroxypentyl) metabolite	> 10,000	0.395	<0.004
UR -144 N -pentanoic acid	> 10,000	0.395	<0.004
XLR11	> 10,000	0.395	<0.004
AKB48	> 10,000	0.395	<0.004
AKB48 N-(5-fluoropentyl) analog	> 10,000	0.395	<0.004
HU-210	> 10,000	0.395	<0.004
BB-22 3-carboxyindole metabolite	> 10,000	0.395	<0.004

Precautions

1. **DO NOT** use kits or components beyond expiration date.
2. **DO NOT** mix conjugates and plates from different kit lots.
3. **DO NOT** pipette reagents by mouth.
4. Pour Substrate out of the bottle into a clean reservoir. To prevent contamination of the substrate, **DO NOT** pipette out of the bottle.
5. All specimens should be considered potentially infectious. Exercise proper handling precautions.
6. Keep plate covered except when adding reagents, washing or reading.
7. Kit components should be refrigerated at all times when not in use.
8. Keep the controls frozen if storing longer than 10 days. Avoid repeated freeze-thaw cycles. Note: Some kits require controls to be stored frozen immediately upon receipt. Reference kit label for details.
9. Use aseptic technique when opening and removing reagents from vials and bottles.
10. **DO NOT** smoke, eat or drink in areas where specimens or reagents are being handled.
11. **DO NOT** substitute DI water for the wash step of this protocol. Use only Creative Diagnostics's wash buffer.
12. Sodium Azide concentrations at 0.01% or less should not interfere with the assay provided that recommended dilutions are followed.
13. **DO NOT** reuse wells, they are for one use only.