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User's Manual

Cocaine/BZE Oral Fluid ELISA Kit

REF **DEIA-XYZ223**

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.

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PRODUCT INFORMATION

Intended Use

For the determination of trace quantities of Cocaine, Benzoylecgonine (BZE) and/or other metabolites in human oral fluid.

General Description

The Cocaine/BZE Oral Fluid ELISA Kit is a qualitative one-step kit designed for use as a screening device for the detection of drugs and/or their metabolites. The kit was designed for screening purposes and is intended for forensic 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

The Cocaine/BZE Oral Fluid ELISA 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 for 45 minutes 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 K-Blue® 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. **Wash Buffer Concentrate (10X):** 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.
2. **K-Blue 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.
3. **Drug-Enzyme Conjugate:** 14 mL (ready-to-use). Drug-horseradish peroxidase concentrate. Do not dilute.
4. **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. Do not wash.
5. **Acid Stop Solution:** 14 mL (ready-to-use). 1 N H_2SO_4 used to stop the enzyme reaction.

Materials Required But Not Supplied

1. Deionized water.
2. Precision pipettes that range from 10 µL-000 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. Microplate reader with a 450 nm filter.

Optional Test Materials

Oral Fluid Multi-Analyte Calibrators

Optional Materials

Microplate shaker.

Storage

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

Specimen Collection And Preparation

This assay was designed to be compatible with the CD Oral Fluid Collection Device with built-in 1:4 sample dilution. No further dilution is recommended for optimal assay performance.

Assay Procedure

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

1. Determine the number of wells to be used.
2. Gently mix the ready-to-use drug-enzyme conjugate solution by inversion. Do not vortex. Store unused conjugate at 2-8°C.
3. Add 20 µL of sample or controls to the appropriate wells in duplicate.
4. Add 100 µL of the ready-to-use drug-enzyme conjugate to each well. For manual runs use 8-channel pipette or 12-channel pipette 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 µL 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 K-Blue Substrate to each well. For manual runs, use a multi-channel pipette for best results.
11. Cover plate with plastic film or plate cover and incubate at room temperature for 30 minutes.
12. Add 100µL of the Acid Stop (1N H_2SO_4) to each well to stop enzyme reaction. Mix gently before measuring 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.

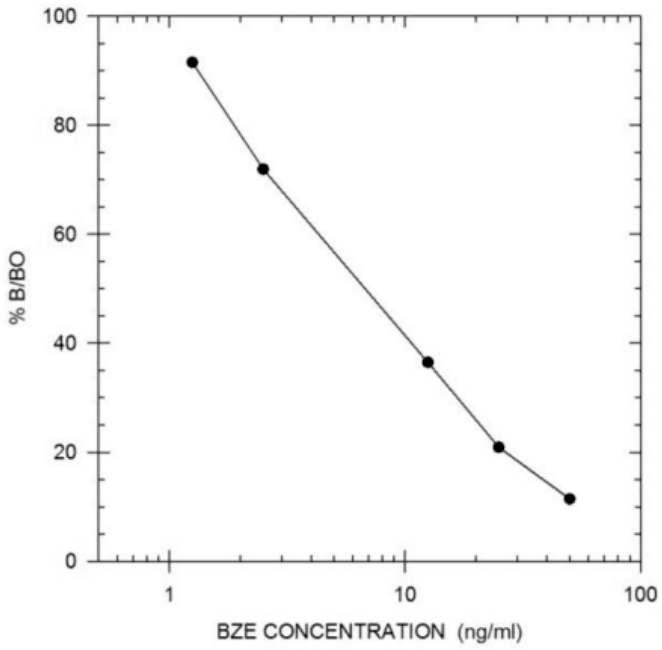
Interpretation Of Results

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.

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 Oral Fluid Buffer	I-50 in Oral Fluid (1:4 dilution: 1 part sample to 3 parts Oral Fluid Buffer)
Benzoylecgonine (BZE)	4.9 ng/mL	11.6 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. The drug concentration that shows 50% less color activity than the zero standard is considered to be the I-50.

Specificity

Compound	Compound Concentration (ng/mL)	BZE Equivalents (ng/mL)	% Cross-Reactivity
Benzoylecgonine	4.92	4.92	100
m-Hydroxybenzoylecgonine	3.5	4.92	140
Cocaethylene	8.4	4.92	59
Cocaine	8.5	4.92	58
Tropacocaine	120	4.92	4
Ecgonine	380	4.92	1.3
Norbenzoylecgonine	950	4.92	0.5
Ecgonine methyl ester	1,000	4.92	0.5
Methylene Blue	1,500	4.92	0.3
Anhydroecgonine methyl ester	2,700	4.92	0.2
Norcocaine	2,700	4.92	0.2

Note: BZE equivalents represent 50% B/B_0 assay displacement in Oral Fluid Buffer.

The compounds having cross-reactivity below 0.03% did not show any significant reaction up to 10 µg/mL.

All the following have a cross-reactivity<0.03%.

Acepromazine; Acetaminophen; Acetylsalicylic Acid; ε-amino-n-caproic Acid; Amitriptyline; Anhydroeconine; Ascorbic Acid; Atropine; Benzoic Acid; Caffeine; Chlordiazepoxide, Chlorpromazine; Clenbuterol; Codeine; Cotinine; Dexamethasone; Dextromethorphan; Diclofenac; Dimethyl Sulfoxide; Doxepin; Ephedrine; Erythromycin; Ethyl p-amino benzoate; Fenoprofen; Flunixin; Folic Acid; Folinic Acid; Furosemide; Gemfibrozil; Gentisic Acid; Glipizide; L-Glutamic Acid; Glutethimide; Glycopyrrolate; Heparin; Hippuric Acid; Hordenine; Hydrocortisone; Ibuprofen; Imipramine; Isoxsuprine; Lidocaine; Meperidine; Metaproterenol; Methadone; Methaqualone; Methocarbamol; Methylprednisolone, Nalorphine; Naproxen; Niacinamide; Nicotine; Norcocaethylene; Nortriptyline; Orphenadrine; Oxyphenbutazone; Penicillin G-Potassium; Penicillin G-Procaine; Pentoxifylline; Phencyclidine; Phenothiazine; Phenylbutazone; Polyethylene Glycol; Prednisolone; Primadone; Procainamide; Procaine; Promazine; Pseudoephedrine; Pyrantel; Pyrimethamine; Pyrilamine; Quinidine; Quinine; Salbutamol; Salicylamide; Salicylic Acid; Sodium Azide; Theophylline; Thiamine; Trimethoprim; Trimipramine; Uric Acid.

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 K-Blue 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. Use aseptic technique when opening and removing reagents from vials and bottles.
9. **DO NOT** smoke, eat or drink in areas where specimens or reagents are being handled.
10. **DO NOT** substitute DI water for the wash step of this protocol. Use only CD' s wash buffer.
11. **DO NOT** reuse wells, they are for one use only.

Limitations

1. Desiccant bag must remain in foil pouch with unused strips. Keep zip lock 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 pipeting a reagent, rinse the pipette tip three times with that reagent.
4. When pipeting 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.