

REF	CONTENT	System-ID	Analyzers on which cobas c pack can be used
03046753 190	ONLINE DAT Cannabinoids II (200 tests)	07 6724 7	COBAS INTEGRA 400 plus COBAS INTEGRA 800
03304671 190	Preciset DAT Plus I CAL 1-6 (6 × 5 mL)		
03304680 190	Preciset DAT Plus II CAL 1-6 (6 × 5 mL)		
03304698 190	C.f.a.s. DAT Qualitative Plus (6 × 5 mL)		
04590856 190	C.f.a.s. DAT Qualitative Plus Clinical (3 × 5 mL)		
03312968 190	Control Set DAT II (for 20 ng/mL assay) PreciPos DAT Set II (2 × 10 mL) PreciNeg DAT Set II (2 × 10 mL)		
03312950 190	Control Set DAT I (for 50 ng/mL assay) PreciPos DAT Set I (2 × 10 mL) PreciNeg DAT Set I (2 × 10 mL)		
04500873 190	Control Set DAT Clinical (for 50 ng/mL assay) PreciPos DAT Clinical (2 × 10 mL) PreciNeg DAT Clinical (2 × 10 mL)		
03312976 190	Control Set DAT III (for 100 ng/mL assay) PreciPos DAT Set III (2 × 10 mL) PreciNeg DAT Set III (2 × 10 mL)		

English

System information

Test THS22, test-ID 0-431 for semiquantitative assay, 20 ng/mL
 Test THS25, test-ID 0-531 for semiquantitative assay, 50 ng/mL
 Test THS21, test-ID 0-631 for semiquantitative assay, 100 ng/mL
 Test TH2QP, test-ID 0-017 for qualitative assay, 20 ng/mL
 Test TH5QP, test-ID 0-217 for qualitative assay, 50 ng/mL
 Test TH1QP, test-ID 0-317 for qualitative assay, 100 ng/mL
 Test TH5QC, test-ID 0-517 for qualitative assay, 50 ng/mL, using C.f.a.s. DAT Qualitative Plus Clinical

Intended use

Cannabinoids II (THCII) is an in vitro diagnostic test for the semiquantitative and qualitative detection of cannabinoids in human urine at cutoff concentrations of 20 ng/mL, 50 ng/mL, and 100 ng/mL on COBAS INTEGRA systems. Semiquantitative test results may be obtained that permit laboratories to assess assay performance as part of a quality control program. Semiquantitative assays are intended to determine an appropriate dilution of the specimen for confirmation by a confirmatory method such as gas chromatography/mass spectrometry (GC/MS).

Cannabinoids II provides only a preliminary analytical test result. A more specific alternate chemical method must be used in order to obtain a confirmed analytical result. GC/MS is the preferred confirmatory method.¹ Clinical consideration and professional judgment should be applied to any drug of abuse test result, particularly when preliminary positive results are used.

Summary

The principal psychoactive component of the hemp plant, *Cannabis sativa*, is generally accepted to be Δ^9 tetrahydrocannabinol (Δ^9 THC), although other cannabinoids may contribute to the psychological and physiological actions of marijuana. The acute effects of marijuana use, concomitant with the desired "high", are memory impairment, time confusion, interference with learning, impaired motor skills, and depersonalization.^{2,3,4} These effects are also manifested in chronic users in addition to cardiovascular, pulmonary, and reproductive effects.

Marijuana is usually smoked, but alternatively may be ingested, either incorporated into food or as a liquid extract (tea). It is rapidly absorbed from the lungs into the blood with rapid onset of effects; the onset is slower but prolonged when ingested. The natural cannabinoids and their metabolic products are fat soluble and are stored in the body's fatty tissues, including brain tissue, for prolonged periods after use.⁵

Cannabinoid metabolites are found in blood, bile, feces, and urine and may be detected in urine within hours of exposure. Because of their fat solubility, they also remain in the body's fatty tissues with slow release and

subsequent urinary excretion for days, weeks, and even months after the last exposure, depending on the intensity and frequency of use.¹ The prominent Δ^9 THC metabolite, 11-nor- Δ^9 THC-9-carboxylic acid (Δ^9 COOH-THC), is the primary urinary marker for detecting marijuana use.

Test principle

Kinetic interaction of microparticles in a solution (KIMS)^{6,7} as measured by changes in light transmission.

In the absence of sample drug, soluble drug conjugates bind to antibody-bound microparticles, causing the formation of particle aggregates. As the aggregation reaction proceeds in the absence of sample drug, the absorbance increases.

When a urine sample contains the drug in question, this drug competes with the drug derivative conjugate for microparticle-bound antibody. Antibody bound to sample drug is no longer available to promote particle aggregation, and subsequent particle lattice formation is inhibited. The presence of sample drug diminishes the increasing absorbance in proportion to the concentration of drug in the sample. Sample drug content is determined relative to the value obtained for a known cutoff concentration of drug.⁸

Reagents - working solutions

- R1** Conjugate Reagent
 Conjugated THC derivative in buffer with BSA and 0.09 % sodium azide.
- SR** Antibody/Microparticle Reagent
 Microparticles attached to THC antibody (mouse monoclonal) in buffer with BSA and 0.09 % sodium azide.

R1 is in position B and SR is in position C.

Precautions and warnings

Pay attention to all precautions and warnings listed in Section 1 / Introduction of this Method Manual.

For USA: Caution: Federal law restricts this device to sale by or on the order of a physician.

Reagent handling

COBAS INTEGRA 400 plus analyzer

Mix all new (non-punctured) **cobas c** packs for 1 minute on a cassette mixer before loading on the analyzer. All in-use **cobas c** packs must also be mixed in the same manner at the beginning of each week (once a week).

COBAS INTEGRA 800 analyzer

Ready for use. After **cobas c** pack puncture, the analyzer automatically mixes the reagent for 1 minute and for half a minute during Begin of Day.

Storage and stability

Shelf life at 2-8 °C: See expiration date on **cobas c** pack label

COBAS INTEGRA 400 plus analyzer

On-board in use at 10-15 °C 84 days

COBAS INTEGRA 800 analyzer

On-board in use at 8 °C 84 days

Do not freeze reagents. Reagents that have been frozen should be discarded.

Specimen collection and preparation

Only the specimens listed below were tested and found acceptable.

Urine: Collect urine samples in clean glass or plastic containers. Fresh urine specimens do not require any special handling or pretreatment, but an effort should be made to keep pipetted samples free of gross debris.

Samples should be within the normal physiological pH range of 5-8. No additives or preservatives are required. It is recommended that urine specimens be stored at 2-8 °C and tested within 5 days of collection.⁹

For prolonged storage, freezing of the sample is recommended.

It has been reported that THC and its derivatives may adsorb onto plastics used for sample collection containers, effectively lowering the drug concentration of the sample.¹⁰

Centrifuge highly turbid specimens before testing.

Adulteration or dilution of the sample can cause erroneous results. If adulteration is suspected, another sample should be collected. Specimen validity testing is required for specimens collected under the *Mandatory Guidelines for Federal Workplace Drug Testing Programs*.¹¹

Caution: Specimen dilutions should only be used as an estimation for GC/MS and are not intended for patient values. Dilution procedures, when used, should be validated.

Materials provided

See "Reagents – working solutions" section for reagents.

Assay

THC and its derivatives may adsorb onto plastics.¹⁰ To minimize the potential for lowering the drug concentration of any sample containing THC, the following is recommended:

1. Dispense ≥ 0.5 mL of each sample (calibrators, controls and patient specimens) into separate analyzer sample cups by pouring over from the primary container or by dispensing with a glass pipette.
2. Avoid the use of plastic pipettes and/or tips due to the potential for adsorbance and possible decrease of THC concentration.
3. Assay the samples within 2 hours of dispensing into the sample cup.
4. Do not return any unused material back into the original sample container.

For optimum performance of the assay follow the directions given in this document for the analyzer concerned. Refer to the appropriate operator's manual for analyzer-specific assay instructions.

Application for urine

COBAS INTEGRA 400 plus test definition

	<i>Semiquantitative</i>	<i>Qualitative</i>
Measuring mode	Absorbance	Absorbance
Abs. calculation mode	Endpoint	Endpoint
Reaction mode	R1-S-SR	R1-S-SR
Reaction direction	Increase	Increase
Reaction start	SR	SR
Wavelength A	659 nm	659 nm
Test range	<i>THS22</i> 0-100 ng/mL	0-5000
	<i>THS25, THS21</i> 0-300 ng/mL	
with postdilution	<i>THS22</i> 0-1000 ng/mL	

THS25, THS21 0-3000 ng/mL

Postdilution factor	10 recommended ^{a)}	No
Calc. first/last	34/57	34/70
Unit	ng/mL	

a) For use when estimating concentration in preparation for GC/MS analysis.

Pipetting parameters

<i>THS22, TH2QP</i>		Diluent (H ₂ O)
R1	65 µL	15 µL
Sample	8 µL	5 µL
SR	45 µL	5 µL
Total volume	143 µL	

<i>THS25, TH5QP, TH5QC</i>		Diluent (H ₂ O)
R1	65 µL	15 µL
Sample	4 µL	5 µL
SR	45 µL	5 µL
Total volume	139 µL	

<i>THS21, TH1QP</i>		Diluent (H ₂ O)
R1	65 µL	15 µL
Sample	2 µL	5 µL
SR	45 µL	5 µL
Total volume	137 µL	

COBAS INTEGRA 800 test definition

	<i>Semiquantitative</i>	<i>Qualitative</i>
Measuring mode	Absorbance	Absorbance
Abs. calculation mode	Endpoint	Endpoint
Reaction mode	R1-S-SR	R1-S-SR
Reaction direction	Increase	Increase
Reaction start	SR	SR
Wavelength A	659 nm	659 nm
Test range	<i>THS22</i> 0-100 ng/mL	0-5000
	<i>THS25, THS21</i> 0-300 ng/mL	
with postdilution	<i>THS22</i> 0-1000 ng/mL	
	<i>THS25, THS21</i> 0-3000 ng/mL	
Postdilution factor	10 recommended ^{b)}	No
Calc. first/last	45/80	45/98
Unit	ng/mL	

b) For use when estimating concentration in preparation for GC/MS analysis.

Pipetting parameters

<i>THS22, TH2QP</i>		Diluent (H ₂ O)
R1	65 µL	15 µL
Sample	8 µL	5 µL
SR	45 µL	5 µL
Total volume	143 µL	

<i>THS25, TH5QP, TH5QC</i>		Diluent (H ₂ O)
R1	65 µL	15 µL

Sample	4 µL	5 µL
SR	45 µL	5 µL
Total volume	139 µL	

<i>THS21, TH1QP</i>		Diluent (H ₂ O)
R1	65 µL	15 µL
Sample	2 µL	5 µL
SR	45 µL	5 µL
Total volume	137 µL	

Calibration

Calibrators	<i>Semiquantitative applications</i>
<i>THS22, 0-431</i>	Preciset DAT Plus II calibrators, CAL 1-5 0, 10, 20, 40, 100 ng/mL Δ ⁹ COOH-THC (20 cutoff, DAT10, system-ID 07 6881 2)
<i>THS25, 0-531</i>	Preciset DAT Plus I calibrators, CAL 1-4, 6 0, 20, 50, 100, 300 ng/mL Δ ⁹ COOH-THC (50 cutoff, DAT12, system-ID 07 6883 9)
<i>THS21, 0-631</i>	Preciset DAT Plus I calibrators, CAL 1, 3-6 0, 50, 100, 200, 300 ng/mL Δ ⁹ COOH-THC (100 cutoff, DAT11, system-ID 07 6882 0)
	<i>Qualitative applications</i>
<i>TH2QP, 0-017</i>	Preciset DAT Plus II calibrators, CAL 1 0 ng/mL or deionized water and Preciset DAT Plus II calibrators, CAL 3 20 ng/mL (20 cutoff, DATQ3, system-ID 07 6770 0) For qualitative applications, the cutoff of 20 ng/mL is assigned a value of 1000.
<i>TH5QP, 0-217</i>	Preciset DAT Plus I calibrators, CAL 1 0 ng/mL or deionized water and C.f.a.s. DAT Qualitative Plus 50 ng/mL (50 cutoff, DATQ1, system-ID 07 6744 1) For qualitative applications, the cutoff of 50 ng/mL is assigned a value of 1000.
<i>TH1QP, 0-317</i>	Preciset DAT Plus I calibrators, CAL 1 0 ng/mL or deionized water and Preciset DAT Plus I calibrators, CAL 4 100 ng/mL (100 cutoff, DATQ2, system-ID 07 6768 9) For qualitative applications, the cutoff of 100 ng/mL is assigned a value of 1000.
<i>TH5QC, 0-517</i>	Preciset DAT Plus I or II calibrators, CAL 1 0 ng/mL or deionized water and C.f.a.s. DAT Qualitative Plus Clinical 50 ng/mL (50 cutoff, DATQ5, system-ID 07 6880 4) For qualitative applications, the cutoff of 50 ng/mL is assigned a value of 1000.

Calibration mode	<i>Semiquantitative applications</i> Logit/Log 4 <i>Qualitative applications</i> Linear regression
Calibration replicate	Duplicate recommended
Calibration interval	COBAS INTEGRA 400 plus analyzer: Each lot, every 28 days, and as required following quality control procedures COBAS INTEGRA 800 analyzer: Each lot, every 28 days, and as required following quality control procedures

Calibration interval may be extended based on acceptable verification of calibration by the laboratory.

A calibration curve is generated using the calibrators. Calibrators must be placed from the highest concentration first to the lowest last on the CAL/QC rack. This curve is retained in memory by the COBAS INTEGRA systems and recalled for later use.

Traceability: This method has been standardized against a primary reference method (GC/MS).

Note

Calibrators should be assayed within 2 hours after placing on-board the instrument.

Quality control

Quality control	<i>20 ng/mL cutoff</i> Control Set DAT II PreciPos DAT Set II (DAT2P, system-ID 07 6771 9) PreciNeg DAT Set II (DAT2N, system-ID 07 6772 7) <i>50 ng/mL cutoff</i> Control Set DAT I PreciPos DAT Set I (DAT1P, system-ID 07 6753 0) PreciNeg DAT Set I (DAT1N, system-ID 07 6754 9) or Control Set DAT Clinical PreciPos DAT Clinical (DATCP, system-ID 07 6879 0) PreciNeg DAT Clinical (DATCN, system-ID 07 6878 2) <i>100 ng/mL cutoff</i> Control Set DAT III PreciPos DAT Set III (DAT3P, system-ID 07 6773 5) PreciNeg DAT Set III (DAT3N, system-ID 07 6774 3)
Control sequence	User defined
Control after calibration	Recommended

For quality control, use control materials as listed in the "Order information" section. In addition, other suitable control material can be used.

Drug concentrations of Control Set DAT I, II, III, and Clinical have been verified by GC/MS.

The control intervals and limits should be adapted to each laboratory's individual requirements. Values obtained should fall within the defined

limits. Each laboratory should establish corrective measures to be taken if values fall outside the defined limits.

Follow the applicable government regulations and local guidelines for quality control.

Note

Controls should be assayed within 2 hours of being placed on-board the instrument.

Results

COBAS INTEGRA systems report results with the following test flags:

Semiquantitative result reporting

THS22 (20 ng/mL cutoff)

Flag	COBAS INTEGRA	Value range
No flag	Negative	< 20 ng/mL
<TEST RNG	Negative	< 0 ng/mL
>TEST RNG	Positive	> 100 ng/mL
POS 20	Positive	≥ 20 ng/mL

Value ranges listed above are based on a cutoff value of 20 ng/mL.

THS25 (50 ng/mL cutoff)

Flag	COBAS INTEGRA	Value range
No flag	Negative	< 50 ng/mL
<TEST RNG	Negative	< 0 ng/mL
>TEST RNG	Positive	> 300 ng/mL
POS 50	Positive	≥ 50 ng/mL

Value ranges listed above are based on a cutoff value of 50 ng/mL.

THS21 (100 ng/mL cutoff)

Flag	COBAS INTEGRA	Value range
No flag	Negative	< 100 ng/mL
<TEST RNG	Negative	< 0 ng/mL
>TEST RNG	Positive	> 300 ng/mL
POS 100	Positive	≥ 100 ng/mL

Value ranges listed above are based on a cutoff value of 100 ng/mL.

Qualitative result reporting

TH2QP (20 ng/mL cutoff)

Flag	COBAS INTEGRA	Value range
No flag	Negative	< 1000
<TEST RNG	Negative	< 0
>TEST RNG	Positive	> 5000
POS 1000	Positive	≥ 1000

Value ranges above are based on assigning the cutoff of 20 ng/mL a value of 1000.

TH5QP, TH5QC (50 ng/mL cutoff)

Flag	COBAS INTEGRA	Value range
No flag	Negative	< 1000
<TEST RNG	Negative	< 0
>TEST RNG	Positive	> 5000
POS 1000	Positive	≥ 1000

Value ranges above are based on assigning the cutoff of 50 ng/mL a value of 1000.

TH1QP (100 ng/mL cutoff)

Flag	COBAS INTEGRA	Value range
No flag	Negative	< 1000
<TEST RNG	Negative	< 0
>TEST RNG	Positive	> 5000
POS 1000	Positive	≥ 1000

Value ranges above are based on assigning the cutoff of 100 ng/mL a value of 1000.

Semiquantitative result reporting

The semiquantitation of preliminary positive results should only be used by laboratories to determine an appropriate dilution of the specimen for confirmation by a confirmatory method such as GC/MS. It also permits the laboratory to establish quality control procedures and assess control performance.

Note: When using the post-dilution function (1:10 dilution), to ensure the sample was not over-diluted, the diluted result must be at least half the analyte cutoff value times 10. If the diluted result falls below half the analyte cutoff value times 10, repeat the sample with a smaller dilution. A dilution that produces a result closest to the analyte cutoff is the most accurate estimation. To estimate the preliminary positive sample's concentration, multiply the result by the appropriate dilution factor. Dilutions should only be used as an estimation for GC/MS.

Limitations - interference

See the "Specific performance data" section of this document for information on substances tested with this assay. There is the possibility that other substances and/or factors may interfere with the test and cause erroneous results (e.g., technical or procedural errors).

A preliminary positive result with this assay indicates the presence of THC in urine. It does not measure the level of intoxication. With a low cutoff assay for cannabinoids, it may be possible to obtain a preliminary positive result from a nonuser as a result of passive inhalation. Significant increases in urinary levels of cannabinoids from passive inhalation have been reported to occur only after exposure to extremely high concentrations of marijuana smoke in small unventilated areas.¹² These extreme exposure conditions are not typical of the usual situations in which the drug is used. More recent reports indicate that urine cannabinoid concentrations resulting from passive inhalation are not likely to exceed 20 ng/mL.^{12,13,14}

For diagnostic purposes, the results should always be assessed in conjunction with the patient's medical history, clinical examination and other findings.

Interfering substances were added to drug free urine at twice the concentration listed below. These samples were then spiked to 20 ng/mL using a 40 ng/mL THC stock solution. Samples were tested and the following results were obtained:

Substance	Concentration tested	% THC Recovery
Acetone	1%	100
Ascorbic Acid	1.5%	81
Bilirubin	0.25 mg/mL	116
Creatinine	5 mg/mL	103
Ethanol	1%	97
Glucose	2%	101
Hemoglobin	0.1 g/L	99
Hemoglobin	1 g/L	105
Hemoglobin	7.5 g/L	118
Human Albumin	0.025%	102
Human Albumin	0.05%	105
Human Albumin	0.5%	121
Oxalic Acid	2 mg/mL	93
Sodium Chloride	0.5 M	81

Substance	Concentration tested	% THC Recovery
Sodium Chloride	1 M	77
Urea	6%	99

Interfering substances were added to drug free urine at twice the concentration listed below. These samples were then spiked to 50 ng/mL using a 100 ng/mL THC stock solution. Samples were tested and the following results were obtained:

Substance	Concentration tested	% THC Recovery
Acetone	1%	90
Ascorbic Acid	1.5%	90
Bilirubin	0.25 mg/mL	111
Creatinine	5 mg/mL	98
Ethanol	1%	88
Glucose	2%	98
Hemoglobin	0.1 g/L	90
Hemoglobin	1 g/L	94
Hemoglobin	7.5 g/L	110
Human Albumin	0.025%	98
Human Albumin	0.05%	102
Human Albumin	0.5%	118
Oxalic Acid	2 mg/mL	86
Sodium Chloride	0.5 M	86
Sodium Chloride	1 M	88
Urea	6%	100

Interfering substances were added to drug free urine at twice the concentration listed below. These samples were then spiked to 100 ng/mL using a 200 ng/mL THC stock solution. Samples were tested and the following results were obtained:

Substance	Concentration tested	% THC Recovery
Acetone	1%	86
Ascorbic Acid	1.5%	93
Bilirubin	0.25 mg/mL	105
Creatinine	5 mg/mL	94
Ethanol	1%	88
Glucose	2%	98
Hemoglobin	0.1 g/L	96
Hemoglobin	1 g/L	93
Hemoglobin	7.5 g/L	102
Human Albumin	0.025%	102
Human Albumin	0.05%	105
Human Albumin	0.5%	110
Oxalic Acid	2 mg/mL	92
Sodium Chloride	0.5 M	90
Sodium Chloride	1 M	88
Urea	6%	94

ACTION REQUIRED

Special Wash Programming: The use of special wash steps is mandatory when certain test combinations are run together on COBAS INTEGRA analyzers. Refer to the CLEAN Method Sheet for further instructions and for the latest version of the Extra wash cycle list.

Where required, special wash/carry-over evasion programming must be implemented prior to reporting results with this test.

Specific performance data

Representative performance data on the COBAS INTEGRA analyzers are given below. Results obtained in individual laboratories may differ.

Precision

Precision was determined in an internal protocol using a series of Δ^9 COOH-THC calibrator and controls in replicates of 20, once a day, for 5 days. The following results were obtained on a COBAS INTEGRA 700 analyzer.

Semiquantitative precision (20 ng/mL cutoff)

Repeatability	Level 1 16 ng/mL	Level 2 20 ng/mL	Level 3 25 ng/mL
Mean ng/mL	15	19	23
SD	0.7	0.6	0.7
CV %	4.6	3.3	2.8

Intermediate precision	Level 1 16 ng/mL	Level 2 20 ng/mL	Level 3 25 ng/mL
Mean ng/mL	15	18	23
SD	0.9	0.9	1.1
CV %	5.9	4.6	4.7

Semiquantitative precision (50 ng/mL cutoff)

Repeatability	Level 1 40 ng/mL	Level 2 50 ng/mL	Level 3 60 ng/mL
Mean ng/mL	39	48	60
SD	2	2	2
CV %	5.1	4.6	3.9

Intermediate precision	Level 1 40 ng/mL	Level 2 50 ng/mL	Level 3 60 ng/mL
Mean ng/mL	40	48	60
SD	2	2	3
CV %	4.9	4.7	4.6

Semiquantitative precision (100 ng/mL cutoff)

Repeatability	Level 1 80 ng/mL	Level 2 100 ng/mL	Level 3 120 ng/mL
Mean ng/mL	80	95	119
SD	3	5	5
CV %	3.8	5.2	4.3

Intermediate precision	Level 1 80 ng/mL	Level 2 100 ng/mL	Level 3 120 ng/mL
Mean ng/mL	78	94	117
SD	4	6	7
CV %	4.7	5.9	6.0

Qualitative precision

20 ng/mL cutoff; 50 ng/mL cutoff; 100 ng/mL cutoff

Cutoff (x)	Number tested	Correct results	Confidence level
0.75x	100	100	> 95 % negative reading
1.25x	100	100	> 95 % positive reading

Lower detection limit of the test

2 ng/mL (20 ng/mL cutoff assay)

5 ng/mL (50 ng/mL cutoff assay)

6 ng/mL (100 ng/mL cutoff assay)

The lower detection limit represents the lowest measurable analyte level that can be distinguished from zero. It is calculated as the value lying 2 standard deviations above that of a zero calibrator (zero calibrator + 2 SD, repeatability, n = 21).

Accuracy

100 urine samples, obtained from a clinical laboratory where they screened negative in a drug test panel by another technology, were evaluated for cannabinoids on a COBAS INTEGRA 700 analyzer. All 100 clinical samples were negative relative to the 20 ng/mL, 50 ng/mL, and 100 ng/mL cutoffs.

50 urine samples, obtained from clinical laboratories where they screened preliminary positive by a commercially available enzyme immunoassay and confirmed positive for cannabinoids by GC/MS (15 ng/mL cutoff) were also evaluated on a COBAS INTEGRA 700 analyzer.

50 samples were positive with the COBAS INTEGRA TH2S2 assay relative to the 20 ng/mL cutoff; 50 samples were positive with the TH5S2 assay relative to the 50 ng/mL cutoff; 50 samples were positive with the TH1S2 assay relative to the 100 ng/mL cutoff.

In addition, 10 samples were diluted to a Δ^9 COOH-THC concentration of 75-100 % of the cutoff concentration for each cutoff; and 10 samples were diluted to a Δ^9 COOH-THC concentration of 100-125 % of the cutoff concentration for each cutoff.

Data from the accuracy studies described above that fell within the near cutoff value ranges were combined with data generated from the diluted positive urine samples. The following results were obtained with Cannabinoids II on a COBAS INTEGRA 700 analyzer relative to the GC/MS values.

Cannabinoids II Clinical Correlation (Cutoff = 20 ng/mL)

COBAS INTEGRA 700 analyzer		Negative samples	GC/MS values (ng/mL)		
			Near cutoff		28-341
			15	20-25	
+	0	0	0	15	45
	100	10	0	0	0

Cannabinoids II Clinical Correlation (Cutoff = 50 ng/mL)

COBAS INTEGRA 700 analyzer		Negative samples	GC/MS values (ng/mL)		
			Near cutoff		64-338
			38	50-63	
+	0	0	0	17	43
	100	10	0	0	0

Cannabinoids II Clinical Correlation (Cutoff = 100 ng/mL)

COBAS INTEGRA 700 analyzer		Negative samples	GC/MS values (ng/mL)		
			Near cutoff		141-1852
			75	109-125	
+	0	0	0	13	47
	100	10	0	0	0

Analytical specificity

The specificity of the COBAS INTEGRA Cannabinoids II assay was determined by generating inhibition curves for each of the compounds listed and determining the approximate quantity of each compound that is equivalent in assay reactivity to the 20, 50 and 100 ng/mL THC assay cutoffs.

Compound	Approximate ng/mL equivalent to 20 ng/mL of Δ^9 COOH-THC	Approximate percent cross-reactivity
8- β -11-dihydroxy- Δ^9 THC	24	84.2
9-carboxy-11-nor- Δ^9 THC glucuronide	29	69.7
9-carboxy-11-nor- Δ^8 THC	41	48.9
11-hydroxy- Δ^9 THC	48	41.6
8- α -hydroxy- Δ^9 THC	90	22.2
Cannabinol	898	2.2
Δ^9 THC	1146	1.7

Compound	Approximate ng/mL equivalent to 50 ng/mL of Δ^9 COOH-THC	Approximate percent cross-reactivity
8- β -11-dihydroxy- Δ^9 THC	58	86.1
9-carboxy-11-nor- Δ^9 THC glucuronide	62	80.7
9-carboxy-11-nor- Δ^8 THC	89	56.4
11-hydroxy- Δ^9 THC	115	43.6
8- α -hydroxy- Δ^9 THC	152	32.9
Cannabinol	2031	2.5
Δ^9 THC	2574	1.9

Compound	Approximate ng/mL equivalent to 100 ng/mL of Δ^9 COOH-THC	Approximate percent cross-reactivity
9-carboxy-11-nor- Δ^9 THC glucuronide	132	76.0
8- β -11-dihydroxy- Δ^9 THC	142	70.5
9-carboxy-11-nor- Δ^8 THC	196	51.1
11-hydroxy- Δ^9 THC	230	43.4
8- α -hydroxy- Δ^9 THC	402	24.9
Cannabinol	3810	2.6
Δ^9 THC	5078	2.0

Drug interference

The following compounds were added to aliquots of pooled normal human urine at a concentration of 100000 ng/mL. None of these compounds gave values in the assay that were equal to or greater than the cutoff concentrations (20 ng/mL, 50 ng/mL, and 100 ng/mL).

Acetaminophen	Enalapril	Naproxen
Acetylsalicylic acid	Ephedrine	Niacinamide
Aminopyrine	Epinephrine	Nifedipine
Amitriptyline	Erythromycin	Norethindrone
Amobarbital	Estriol	Norpseudoephedrine
Amoxicillin	Fenoprofen	Omeprazole
d-Amphetamine	Fluoxetine	Oxazepam
Ampicillin	Flurbiprofen	Pantoprazole ^{c)}
Ascorbic acid	Furosemide	Penicillin G
Aspartame	Gentisic acid	Pentazocine
Atropine	Glutethimide	Pentobarbital

Benzocaine	Guaiacol glycerol ether	Phencyclidine
Benzoyllecgonine (cocaine metabolite)	Hydrochlorothiazide	Phenobarbital
Benzphetamine	5-Hydroxyindole-3- acetic acid	Phenothiazine
Butabarbital	5-Hydroxyindole-2- carboxylic acid	Phenylbutazone
Caffeine	Ibuprofen	Phenylpropanolamine
Calcium hypochlorite	Imipramine	Procaine
Captopril	Isoproterenol	Promethazine
Chlordiazepoxide	Ketamine	<i>d</i> -Pseudoephedrine
Chloroquine	Lidocaine	<i>l</i> -Pseudoephedrine
Chlorpheniramine	LSD	Quinidine
Chlorpromazine	Mefloquine	Quinine
Dextromethorphan	Melanin	Ranitidine
Dextropropoxyphene	Meperidine	Secobarbital
Diazepam	Methadone	Sulindac
Digoxin	<i>d</i> -Methamphetamine	Tetracycline
Diphenhydramine	Methaqualone	Tetrahydrozoline
Diphenylhydantoin	Methpyrion	Tolmetin
Dopamine	Morphine sulfate	Trifluoperazine
Ecgonine	Naloxone	Verapamil
Ecgonine methyl ester	Naltrexone	Zomepirac

c) For the 20 ng/mL cutoff, concentrations of Pantoprazole up to 50000 ng/mL did not give values in the assay that were equal to or greater than the cutoff concentration.

For the 20 ng/mL cutoff, the cross-reactivity for Niflumic Acid, at a concentration of 171 ng/mL, is 12 %. For the 50 ng/mL cutoff, the cross-reactivity for Niflumic Acid, at a concentration of 678 ng/mL, is 7 %. For the 100 ng/mL cutoff, the cross-reactivity for Niflumic Acid, at a concentration of 1607 ng/mL, is 6 %.

Any modification of the instrument as set forth in this labeling requires validation by the laboratory.

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A point (period/stop) is always used in this Method Sheet as the decimal separator to mark the border between the integral and the fractional parts of a decimal numeral. Separators for thousands are not used.

Symbols

Roche Diagnostics uses the following symbols and signs in addition to those listed in the ISO 15223-1 standard (for USA: see <https://usdiagnostics.roche.com> for definition of symbols used):

CONTENT

Contents of kit



Volume after reconstitution or mixing

GTIN

Global Trade Item Number

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