

Extraction of THC-COOH from Urine Using ISOLUTE® HAX Columns

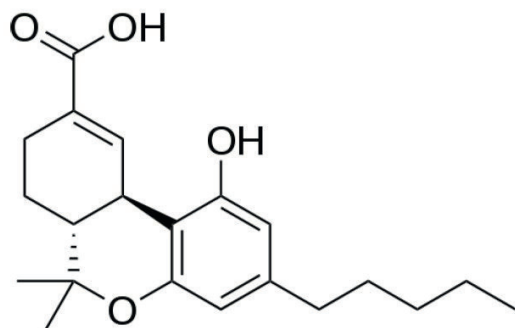


Figure 1. Structure of THC-COOH.

Introduction

This method was developed for the extraction of the tetrahydrocannabinol carboxylic acid metabolite (THC-COOH) from urine using a mixed non-polar and anion exchange retention mechanism. Typical recoveries of the analyte are > 75%.

Due to the presence of a carboxylic acid group, this compound will require derivatization prior to analytical determination by GC-MS.

Extraction Procedure

Format

ISOLUTE® HAX 200 mg/10 mL, Part Number 903-0020-H

Matrix

The matrix is of high ionic strength and contains a number of potential interference compounds. The mixed retention mechanism used in this extraction allows a rigorous interference elution procedure.

Pre-Treatment

Add 100 µL of internal standard to 3 mL of urine. Hydrolyze with 0.1 mL of NaOH, 10 M. Heat for 15 minutes at 60 °C. Cool. Add 0.5 mL of glacial acetic acid.

Condition

Condition the column with 1 mL of methanol at 2 mL/min.

Equilibration

Rinse the column with 1 mL of deionized water at 2 mL/min.

Sample Loading

Apply sample at a flow rate of 2 mL/min.

Interference Elution

Rinse column with 0.3 M ammonium acetate buffer, (pH 8, 1 mL), at 2 mL/min. Rinse column with 1 mL of 20 mM ammonium acetate buffer at 2 mL/min, followed by 1 mL of methanol at 2 mL/min.

Analyte Elution

Elute analyte with 1 mL of methanol/ethyl acetate/acetic acid 48:50:2, at 1 mL/min.

Analytical Method GC-MS

Column

DB-5 capillary, 15 m x 0.25 mm I.D. x 0.25 µm

Initial Temperature

180 °C for 1 min.

Temperature Ramp

20 °C/min.

Final Temperature

280 °C for 1 min.

Detection

MS

Reagents

1. 10 M NaOH
2. Glacial acetic acid
3. Methanol
4. 0.3 M ammonium acetate buffer, pH between 7.5 and 8.5
5. 20 mM ammonium acetate buffer, pH between 7.5 and 8.5
6. Methanol/ethyl acetate/acetic acid 48:50:2

Ordering Information

Part Number	Description	Quantity
903-0020-H	ISOLUTE® HAX 200 mg/10 mL	50

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