

## Overview

### Useful For

Identifying amphetamines (and methamphetamines), opiates, phencyclidine (PCP), as well as metabolites of cocaine and marijuana in meconium specimens

### Testing Algorithm

Testing begins with immunoassay screen. Positives are confirmed and quantitated by liquid chromatography-tandem mass spectrometry (LC-MS/MS) at an additional charge.

### Reflex Tests

Test Id	Reporting Name	Available Separately	Always Performed
AMPHM	Amphetamines, Confirmation, M	Yes	No
COKEM	Cocaine and Metabolites, Confirm, M	Yes	No
OPATM	Opiate Confirmation, M	Yes	No
PCPMC	PCP Confirmation, Meconium	Yes	No
THCM	Carboxy-THC Confirmation, M	Yes	No

### Method Name

Enzyme-Linked Immunosorbent Assay (ELISA)

### NY State Available

Yes

## Specimen

### Specimen Type

Meconium

### Ordering Guidance

For chain-of-custody testing, order DSM5X / Drugs of Abuse Screen 5, Chain of Custody, Meconium.

### Specimen Required

**Supplies:** Stool container, Small (Random), 4 oz (T288)

**Container/Tube:** Stool container (T288)

**Specimen Volume:** 1 g (approximately 1 teaspoon)

**Collection Instructions:** Collect entire random meconium specimen.

### Forms

If not ordering electronically, complete, print, and send a [Therapeutics Test Request](#) (T831) with the specimen.

### Reject Due To

Other Grossly bloody reject, Pink OK Stool Diapers

### Specimen Minimum Volume

0.45 g (approximately 0.5 teaspoon)

### Specimen Stability Information

Specimen Type	Temperature	Time	Special Container
Meconium	Frozen (preferred)	14 days	
	Refrigerated		

## Clinical & Interpretive

### Clinical Information

Illicit drug use during pregnancy is a major social and medical issue. Drug abuse during pregnancy is associated with significant perinatal complications, which include a high incidence of stillbirths, meconium-stained fluid, premature rupture of the membranes, maternal hemorrhage (abruption placenta or placenta praevia), and fetal distress.(1) In the neonate, the mortality rate, as well as morbidity (eg, asphyxia, prematurity, low birthweight, hyaline membrane disease, infections, aspirations pneumonia, cerebral infarction, abnormal heart rate and breathing patterns, drug withdrawal) are increased.(1)

The disposition of drug in meconium is not well understood. The proposed mechanism is that the fetus excretes drug into bile and amniotic fluid. Drug accumulates in meconium either by direct deposit from bile or through swallowing of amniotic fluid.(2) The first evidence of meconium in the fetal intestine appears at approximately the tenth to twelfth week of gestation, and slowly moves into the colon by the sixteenth week of gestation.(3) Therefore, the presence of drugs in meconium has been proposed to be indicative of in utero drug exposure during the final 4 to 5 months of pregnancy, a longer historical measure than is possible by urinalysis.(2)

### Reference Values

Negative

Positives are reported with a quantitative LC-MS/MS result.

Cutoff concentrations

Amphetamines by ELISA: 100 ng/g

Methamphetamine by ELISA: 100 ng/g

Benzoyllecgonine (cocaine metabolite) by ELISA: 100 ng/g

Opiates by ELISA: 100 ng/g

Tetrahydrocannabinol carboxylic acid (marijuana metabolite) by ELISA: 20 ng/g

Phencyclidine by ELISA: 20 ng/g

### Interpretation

A positive result indicates that the baby was exposed to the drugs indicated.

### Cautions

If heroin use is suspected, specimen must be sent frozen to prevent loss of 6-monoacetylmorphine (6MAM, heroin metabolite). When refrigerated, a significant percentage of 6MAM will convert to morphine in fewer than 24 hours.

Unless sent frozen, cocaine metabolite, *m*-hydroxybenzoyllecgonine, will degrade within 72 hours of collection.

### Clinical Reference

1. Ostrea EM Jr: Understanding drug testing in the neonate and the role of meconium analysis. J Perinat Neonatal Nurs 2001 Mar;14(4):61-82; quiz 105-106
2. Ostrea EM Jr, Brady MJ, Parks PM, et al: Drug screening of meconium in infants of drug-dependent mothers; an alternative to urine testing. J Pediatr 1989 Sep;115(3):474-477
3. Ahanya SN, Lakshmanan J, Morgan BL, Ross MG: Meconium passage in utero: mechanisms, consequences, and management. Obstet Gynecol Surv 2005 Jan;60(1):45-56; quiz 73-74

### Performance

### Method Description

Meconium specimen is homogenized in a buffer. The homogenate is analyzed by enzyme-linked immunosorbent assay (ELISA) to detect the presence of drug. If drug presence is indicated by a positive result of ELISA, liquid chromatography-tandem mass spectrometry analysis is performed to verify the presence of the drug. (Unpublished Mayo method)

**PDF Report**

No

**Specimen Retention Time**

2 weeks

**Performing Laboratory Location**

Rochester

**Fees & Codes**
**Test Classification**

This test was developed, and its performance characteristics determined by Mayo Clinic in a manner consistent with CLIA requirements. This test has not been cleared or approved by the US Food and Drug Administration.

**CPT Code Information**

80307

See individual reflex tests for appropriate CPT codes

**LOINC® Information**

Test ID	Test Order Name	Order LOINC Value
DASM5	Drugs of Abuse Screen, Meconium 5	49046-6

Result ID	Reporting Name	LOINC®
32197	Amphetamine	26895-3
32199	Methamphetamine	27289-8
32201	Cocaine	26956-3
32203	Opiate	29158-3
32205	Phencyclidine	26859-9
32207	Tetrahydrocannabinol	26893-8
32208	Chain of Custody	77202-0