MAYO CLINIC LABORATORIES

Test Definition: OSMOF

Osmolality, F

Overview

Useful For

Measurement of osmolality for the workup of cases of chronic diarrhea

Diagnosis of factitious diarrhea (where patient adds fluid to stool to simulate diarrhea)

Method Name

Freezing Point Depression

NY State Available

Yes

Specimen

Specimen Type

Fecal

Ordering Guidance

This test is **only** clinically valid if performed on watery specimens. In the event a formed fecal specimen is submitted, the test will not be performed.

Specimen Required

Patient Preparation: No barium, laxatives, or enemas may be used for 96 hours prior to start of, or during, collection.

Supplies: Stool containers - 24, 48, 72 Hour Kit (T291)

Container/Tube: Stool container

Specimen Volume: 10 g

Collection Instructions: Collect a very liquid stool specimen.

Reject Due To

All specimens will be evaluated at Mayo Clinic Laboratories for test suitability.

Specimen Minimum Volume

5 g

Specimen Stability Information

Specimen Type	Temperature	Time	Special Container
Fecal	Frozen (preferred)	14 days	
	Refrigerated	7 days	
	Ambient		

Clinical & Interpretive

Clinical Information

The concentration of electrolytes in fecal water and their rate of excretion are dependent upon 3 factors:

-Normal daily dietary intake of electrolytes

-Passive transport from serum and other vascular spaces to equilibrate fecal osmotic pressure with vascular osmotic pressure

-Electrolyte transport into fecal water due to exogenous substances and rare toxins (eg, cholera toxin)

Fecal osmolality is normally in equilibrium with vascular osmolality, and sodium is the major effector of this equilibrium. Fecal osmolality is normally 2 x (sodium + potassium) unless there are exogenous factors inducing a change in composition, such as the presence of other osmotic agents (magnesium sulfate, saccharides) or drugs inducing secretions, such as phenolphthalein or bisacodyl.

Differentiating osmotic from non-osmotic causes of diarrhea is the goal of liquid stool testing.(1,2) The primary way this is accomplished is through the measurement of sodium and chloride and calculation of the osmotic gap, which uses an assumed normal osmolality of 290 mOsm/kg rather than direct measurement of the osmolality.

Measurement of osmolality can be useful in the evaluation of chronic diarrhea to help identify whether a specimen has been diluted with hypotonic fluid to simulate diarrhea.(1,3)

Reference Values

An interpretive report will be provided

Interpretation

Stool osmolality below 220 mOsm/kg indicates dilution with a hypotonic fluid.(1)

Cautions

Prolonged storage at incorrect temperatures may cause osmolality to increase due to bacterial metabolism generating osmotically active products.

Clinical Reference

1. Steffer KJ, Santa Ana CA, Cole JA, Fordtran JS: The practical value of comprehensive stool analysis in detecting the cause of idiopathic chronic diarrhea. Gastroenterol Clin North Am. 2012;41:539-560

2. Sweetser S: Evaluating the patient with diarrhea: A case-based approach. Mayo Clin Proc. 2012;87:596-602

3. Phillips S, Donaldson L, Geisler K, Pera A, Kochar R: Stool composition in factitial diarrhea: a 6-year experience with stool analysis. Ann Intern Med. 1995;123:97-100

Performance

Method Description

The depression of the freezing point of serum or other fluid is used to measure osmolality in most osmometers. The extent of lowering below 0 degrees C (the freezing point of water) is a function of the concentration of substances dissolved in the serum. By definition, 1 milliosmole per kilogram lowers the freezing point 0.001858 degrees C.(Schnidler EI, Brown SM, Scott MG: Electrolytes and Blood Gases. In: Rifai N, Horvath AR, Wittwer CT, eds: Tietz Textbook of Clinical Chemistry and Molecular Diagnostics. 6th ed. Elsevier; 2018:610-612)

PDF Report

No

Specimen Retention Time

7 days

Performing Laboratory Location

Rochester

Fees & Codes

Test Classification

This test has been modified from the manufacturer's instructions. Its performance characteristics were 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

84999

LOINC® Information

Test ID	Test Order Name	Order LOINC Value
OSMOF	Osmolality, F	2693-0

Result ID	Reporting Name	LOINC®
OSMOF	Osmolality, F	2693-0