MAYO CLINIC LABORATORIES

# Test Definition: DSAC

Disaccharidase Activity Panel, Tissue

## Overview

### Useful For

Evaluation of patients who present with signs or symptoms suggestive of disaccharidase disorders

This test is **not intended for** carrier detection.

### Genetics Test Information

Diagnostic testing for patients with clinical signs and symptoms suspicious of a disaccharidase deficiency.

### Method Name

Spectrophotometry

### NY State Available

Yes

## Specimen

### Specimen Type

Tissue

### Shipping Instructions

Freeze immediately after collection and ship frozen.

### Specimen Required

**Specimen Type:** Tissue
**Source:** Intestinal biopsy
**Supplies:** 15 mL Tissue Tube-DSAC (T993)
**Container/Tube:** 15 mL tissue tube
**Specimen Volume:** 5 mg
**Collection Instructions:**
1. Place specimen in tissue tube.
2. Specimen **should not** be placed on gauze, filter paper, or swabs/wooden sticks and **should not** have any saline, water, support, or embedding material added.

### Forms

If not ordering electronically, complete, print, and send 1 of the following forms with the specimen:
Biochemical Genetics Patient Information (T602)
Gastroenterology and Hepatology Test Request (T728)

### Specimen Minimum Volume

See Specimen Required

### Reject Due To

| | |
|---|---|
| Specimens sent in formaldehyde, saline, or any supportive media<br>Specimens placed on gauze, filter paper, foil, or swabs/wooden sticks | Reject |

### Specimen Stability Information

| Specimen Type | Temperature | Time | Special Container |
|---|---|---|---|
| Tissue | Frozen | 28 days | |

## Clinical & Interpretive

### Clinical Information

Disaccharidases in the small intestines are responsible for the breakdown of disaccharides (double sugars) into monosaccharides (simple sugars). Patients with a deficiency of one or more disaccharidase can experience intolerance to foods containing complex sugars resulting in a range of gastrointestinal symptoms, including diarrhea or constipation, abdominal pain and cramping, gas, bloating, and nausea. In addition, patients may experience malnutrition, weight loss, or failure to thrive. Given the nonspecificity and frequency of abdominal symptoms, misdiagnosis or a diagnostic delay of disaccharide deficiencies may occur.

Primary and secondary causes of disaccharidase deficiencies exist, and age of onset may vary from birth through adulthood. Primary causes are rare and result from genetic alterations in a variety of genes. Secondary deficiencies typically result from small intestinal mucosal damage. Treatment of both primary and secondary disaccharidase deficiencies involves dietary management. While primary deficiencies require lifelong treatment, secondary disaccharidase deficiencies may require treatment only until the intestinal lining recovers.

### Reference Values

Lactase: > or =14.0 nmol/min/mg protein
Sucrase: > or =19.0 nmol/min/mg protein
Maltase: > or =70.0 nmol/min/mg protein
Palatinase: > or =6.0 nmol/min/mg protein
Glucoamylase: > or =8.0 nmol/min/mg protein

### Interpretation

Quantitative values of lactase, sucrase, maltase, palatinase, and glucoamylase are reported. Clinical interpretation of results is provided.

### Cautions

This test will not distinguish between primary and secondary causes of disaccharidase deficiencies.

### Clinical Reference

1. Cohen SA, Oloyede H, Gold BD, Mohammed A, Elser HE. Clinical characteristics of disaccharidase deficiencies among children undergoing upper endoscopy. J Pediatr Gastroenterol Nutr. 2018;66 Suppl 3:S56-S60
2. Semenza G, Auricchio S, Mantei N. Small-intestinal disaccharidases. In: Valle DL, Antonarakis S, Ballabio A, Beaudet AL, Mitchell GA, eds. The Online Metabolic and Molecular Bases of Inherited Disease. McGraw Hill; 2019. Accessed November 18, 2024. Available at https://ommbid.mhmedical.com/content.aspx?bookid=2709&sectionid=225081608

## Performance

### Method Description

Disaccharidase activities are measured by incubating intestinal homogenates with an appropriate disaccharide substrate, which releases glucose. Glucose production is determined by a glucose oxidase reagent mixture that oxidizes glucose to produce peroxide, which reacts with phenol aminophenazone to form a red quinoneimine dye. The concentration of quinoneimine is determined spectrophotometrically, and the concentration of liberated glucose is calculated from a glucose standard curve. The amount of glucose produced is proportional to the disaccharidase activity in the intestinal homogenate. Disaccharidase activities are expressed as nanomoles of glucose per minute per milligram of protein (nmol/min/mg prot).(Unpublished Mayo method)

### PDF Report

No

### Day(s) Performed

Monday through Friday

### Report Available

3 to 4 days

### Specimen Retention Time

Biopsy homogenate: 1 month

### Performing Laboratory Location

Mayo Clinic Laboratories - Rochester Main Campus

## Fees & Codes

## Fees

- Authorized users can sign in to Test Prices for detailed fee information.
- Clients without access to Test Prices can contact Customer Service 24 hours a day, seven days a week.
- Prospective clients should contact their account representative. For assistance, contact Customer Service.

## Test Classification

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

## CPT Code Information

82657

## LOINC® Information

| Test ID | Test Order Name | Order LOINC® Value |
|---|---|---|
| DSAC | Disaccharidase Activity Panel, Ts | 57765-0 |

| Result ID | Test Result Name | Result LOINC® Value |
|---|---|---|
| 608237 | Lactase | 81315-4 |
| 608238 | Sucrase | 30372-7 |
| 608239 | Maltase | 30315-6 |
| 608240 | Palatinase | 81314-7 |
| 608241 | Glucoamylase | 81322-0 |
| 608242 | Interpretation | 57779-1 |
| 608243 | Reviewed By | 18771-6 |