MAYO CLINIC LABORATORIES

Test Definition: BLACT

Beta Lactamase

Overview

Useful For

Predicting the resistance of beta-lactamase producing isolates to hydrolysis-susceptible beta-lactam antimicrobials

Special Instructions

- Infectious Specimen Shipping Guidelines

Method Name

Nitrocefin

NY State Available

Yes

Specimen

Specimen Type

Varies

Shipping Instructions

See Infectious Specimen Shipping Guidelines in Special Instructions for shipping information.

Necessary Information

Specimen source and organism identification are required.

Specimen Required

Specimen Type: Pure culture of actively growing *Enterococcus* species, *Haemophilus influenzae*, *Moraxella catarrhalis*, *Neisseria gonorrhoeae*, or *Staphylococcus* species

Container/Tube: Slant

Specimen Volume: Entire specimen

Collection Instructions: Send specimen in an approved mailing container and label as an etiologic agent/infectious substance.

Specimen Minimum Volume

NA

Reject Due To

Other	Agar plate

Specimen Stability Information

Specimen Type	Temperature	Time
Varies	Ambient (preferred)	
	Refrigerated	

Clinical and Interpretive

Clinical Information

Various bacteria produce a class of enzymes called beta-lactamases, which may be mediated by genes on plasmids or chromosomes. Production of beta-lactamase may be constitutive or induced by exposure to antimicrobials. Beta-lactamases hydrolyze (and thereby inactivate) the beta-lactam rings of a variety of susceptible penicillins and cephalosporins. Beta-lactamases are classified by their preferred antimicrobial substrate and the effect of various inhibitors (such as clavulanic acid) on them.

Some antimicrobials, such as cefazolin and cloxacillin are resistant to such hydrolysis (at least for staphylococcal beta-lactamases).

Beta-lactamase producing strains of the following are resistant to many types of penicillin: *Staphylococcus* species, *Hemophilus influenzae*, *Neisseria gonorrhoeae*, *Bacteroides* species, *Enterococcus* species, and *Moraxella catarrhalis*.

The above organisms, when isolated from critical specimens such as blood or spinal fluid, should always be tested for beta-lactamase production.

Addition of a beta-lactamase inhibitor to a beta-lactam (such as sulbactam plus ampicillin) restores the activity of the antimicrobials.

Reference Values

Negative (reported as positive or negative)

Interpretation

A positive test indicates production of beta-lactamase.

Cautions

Some beta-lactamase tests (iodometric and acidometric methods) may not detect certain beta-lactamases.

Many bacteria that do not produce beta-lactamase will be resistant to beta-lactams by other mechanisms.

This test should not be used to detect extended-spectrum beta-lactamases.

Clinical Reference

Livermore DM, Williams JD: Beta-lactams: mode of action and mechanisms of bacterial resistance. In Antibiotics in Laboratory Medicine. Fourth edition. Edited by V Lorian. Baltimore, MD, Williams and Wilkins, 1996, pp 502-578

Performance

Method Description

A loopful of test organism is placed on a Cefinase disk, which contains the chromogenic cephalosporin, nitrocefin. Beta-lactamase will produce a change from yellow to red within 1 hour and usually within 5 minutes.(Antimicrobial susceptibility testing. In Color Atlas and Textbook of Diagnostic Microbiology. Fifth edition. Edited by EW Koneman, SD Allen, WM Janda, et al: New York, Lippincott-Raven Publishers, 1997, pp 828-831)

PDF Report

No

Day(s) and Time(s) Test Performed

Monday through Sunday

Analytic Time

1 day

Maximum Laboratory Time

3 days

Specimen Retention Time

1 month

Performing Laboratory Location

Rochester

Fees and 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 Regional Manager. For assistance, contact Customer Service.

Test Classification

This test has been cleared, approved or is exempt by the U.S. Food and Drug Administration and is used per manufacturer's instructions. Performance characteristics were verified by Mayo Clinic in a manner consistent with CLIA requirements.

CPT Code Information

87185

LOINC® Information

Test ID	Test Order Name	Order LOINC Value
BLACT	Beta Lactamase	6985-6

Result ID	Test Result Name	Result LOINC Value
BLACT	Beta Lactamase	6985-6