MAYO CLINIC LABORATORIES

Test Definition: IL5P

Interleukin 5, Plasma

Overview

Useful For

Evaluation of patients with disorders known to be associated with hypereosinophilia

Method Name

Electrochemiluminescence (ECL)

NY State Available

Yes

Specimen

Specimen Type

Plasma EDTA

Specimen Required

Supplies: Sarstedt Aliquot Tube, 5 mL (T914)
Collection Container/Tube: Lavender top (EDTA)
Submission Container/Tube: Plastic vial
Specimen Volume: 0.5 mL
Collection Instructions:
1. Immediately after specimen collection, place the tube on wet ice.
2. Centrifuge at 4 degrees C, 1500 x *g* for 10 minutes.
3. Aliquot plasma into plastic vial.
4. Freeze specimen within 2 hours of collection.
5. Specimens received at ambient temperature will be canceled.

Specimen Minimum Volume

0.3 mL

Reject Due To

Gross hemolysis	Reject
Gross lipemia	OK
Gross icterus	OK
Heat-treated specimen	Reject

Specimen Stability Information

Specimen Type	Temperature	Time	Special Container
Plasma EDTA	Frozen (preferred)	21 days	
	Refrigerated	24 hours	

Clinical & Interpretive

Clinical Information

Interleukin-5 (IL-5), a homodimer composed of two 20-kDa subunits, is expressed primarily by CD4+ Th2 (helper T cells, subset 2) cells and, to a lesser extent, by activated mast cells.(1,2) IL-5 acts on mature eosinophils, leading to proliferation, activation, differentiation, and survival.

IL-5 plays a critical role in the host immune response to helminthic infections and has been implicated in the pathology of certain allergic diseases, asthma, and vasculitis.(1-3) In these diseases, it is associated with significant increase in levels of eosinophils, a condition referred to as hypereosinophilia. IL-5 is known to activate eosinophils, which interact through their Fc receptors to bind helminths that have been opsonized by IgG or IgA specific antibodies.(1) Of the other diseases associated with IL-5 and hypereosinophilia, those of the skin and airways (urticaria, asthma, allergic bronchopulmonary aspergillosis, and eosinophilic granulomatosis with polyangiitis [EGPA]) have received considerable attention recently due to availability of therapies that target the IL-5 pathways.(4) In EPGA, increased levels of IL-5 have been seen in a subset of patients with implications for disease management.(4,5) The IL-5 pathway-directed therapies have been approved for use in patients with severe eosinophilic asthma. With availability of these therapies, it is likely that IL-5 cytokine testing may be used to identify patients at-risk for disease.

Reference Values

< or =1.0 pg/mL

Interpretation

Elevated concentrations of interleukin-5 (IL-5) may indicate an expanded Th2 (helper T cells, subset 2)-immune response, which may be associated with hypereosinophilia.

Cautions

Interleukin-5 (IL-5) is a nonspecific marker associated with a Th2 (helper T cells, subset 2)-immune response and is not diagnostic for any specific disease or disease process. Elevated concentrations of IL-5 must be interpreted within the clinical context of the patient.

Normal concentrations of IL-5 do not exclude the possibility of a Th2-immune response or hypereosinophilia.

IL-5 has limited stability. Following centrifugation, plasma must be either immediately frozen or refrigerated. Samples can only be stored at refrigerated temperatures for 24 hours, after which time samples must be frozen. Storage of plasma for any length of time at room temperature is not acceptable.

Clinical Reference

1. Nakayama T, Hirahara K, Onodera A, et al. Th2 cells in health and disease. Annu Rev Immunol. 2017;35:53-84
2. Yanagibashi T, Satoh M, Nagai Y, Koike M, Takatsu K. Allergic diseases: From bench to clinic - Contribution of the discovery of interleukin-5. Cytokine. 2017;98:59-70

3. Kandikattu HK, Venkateshaiah SU, Mishra A. Synergy of interleukin (IL)-5 and IL-18 in eosinophil mediated pathogenesis of allergic diseases. Cytokine Growth Factor Rev. 2019;47:83-98
4. Harish A, Schwartz SA: Targeted anti-IL-5 therapies and future therapeutics for hypereosinophilic syndrome and rare eosinophilic conditions. Clin Rev Allergy Immunol. 2020;59(2):231-247
5. Nishi R, Koike H, Ohyama K, et al. Association between IL-5 levels and the clinicopathologic features of eosinophilic granulomatosis with polyangiitis. Neurology. 2021;96(5):226-229
6. Melo JT Jr, Tunstall T, Pizzichini MMM, et al: IL-5 levels in nasosorption and sputosorption correlate with sputum eosinophilia in allergic asthma. Am J Respir Crit Care Med. 2019;199(2):240-243
7. Guntur VP, Manka LA, Denson JL, et al: Benralizumab as a steroid-sparing treatment option in eosinophilic granulomatosis with polyangiitis. J Allergy Clin Immunol Pract. 2021;9(3):1186-1193
8. Hillas G, Fouka E, Papaioannou AI: Antibodies targeting the interleukin-5 signaling pathway used as add-on therapy for patients with severe eosinophilic asthma: a review of the mechanism of action, efficacy, and safety of the subcutaneously administered agents, mepolizumab and benralizumab. Expert Rev Respir Med. 2020;14(4):353-365

Performance

Method Description

The interleukin-5 (IL-5) cytokine assay measures human cytokines in a 96-well spotted plate. The assay employs a sandwich immunoassay format where capture antibodies are coated on a single spot on the bottom of each well. Diluted samples, calibrators, and controls are added and to the plate. If present, IL-5 will bind to the capture antibodies. After incubation, a solution containing detection antibodies conjugated with electrochemiluminescent labels is added. After a final incubation, a buffer is added that creates the appropriate chemical environment for electrochemiluminescence. The plate is then read on the MSD QuickPlex SQ120. The machine applies a voltage that causes bound labels to emit measurable light. The MSD QuickPlex SQ120 measures the intensity of emitted light and correlates it to a set of standards of known quantity via a 4-point logistics curve fitting method.(Unpublished Mayo method)

PDF Report

No

Day(s) Performed

Wednesday

Report Available

2 to 8 days

Specimen Retention Time

14 days

Performing Laboratory Location

Rochester

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

83520

LOINC® Information

Test ID	Test Order Name	Order LOINC® Value
IL5P	Interleukin 5, P	33938-2

Result ID	Test Result Name	Result LOINC® Value
36519	Interleukin 5, P	33938-2