

Sep 03, 2020

ELISA for quantification of granulocyte macrophage-colony stimulating factor (GM-CSF) in human serum or plasma.

DOI

<https://dx.doi.org/10.17504/protocols.io.bksukwew>

Angel Justiz-Vaillant¹, Belkis Ferrer-Cosme²

¹University of the West Indies St. Augustine;

²"Saturnino Lora Torres" Provincial Teaching Clinical Surgical Hospital. Cuba



Angel A Justiz-Vaillant

University of the West Indies St. Augustine

Create & collaborate more with a free account

Edit and publish protocols, collaborate in communities, share insights through comments, and track progress with run records.

Create free account

OPEN  ACCESS



DOI: <https://dx.doi.org/10.17504/protocols.io.bksukwew>

Protocol Citation: Angel Justiz-Vaillant, Belkis Ferrer-Cosme 2020. ELISA for quantification of granulocyte macrophage-colony stimulating factor (GM-CSF) in human serum or plasma.. protocols.io <https://dx.doi.org/10.17504/protocols.io.bksukwew>

License: This is an open access protocol distributed under the terms of the **Creative Commons Attribution License**, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited

Protocol status: In development

We are still developing and optimizing this protocol

Created: September 03, 2020

Last Modified: September 03, 2020

Protocol Integer ID: 41524

Keywords: immunoregulatory cytokine, primary function of interleukin, plasma interleukin, cytokine, interleukin, granulocyte macrophage, immune cell, immune response, leukocyte, granulocyte, psoriatic arthritis, macrophage, differentiation of immune cell, human serum, elisa for quantification, affinity receptors in cell surface, patients with psoriatic arthritis, stimulating factor, protein, affinity receptor, many other body cell, large group of protein, essential roles in the activation

Disclaimer

DISCLAIMER – FOR INFORMATIONAL PURPOSES ONLY; USE AT YOUR OWN RISK

The protocol content here is for informational purposes only and does not constitute legal, medical, clinical, or safety advice, or otherwise; content added to [protocols.io](https://dx.doi.org/10.17504/protocols.io.bksukwew) is not peer reviewed and may not have undergone a formal approval of any kind. Information presented in this protocol should not substitute for independent professional judgment, advice, diagnosis, or treatment. Any action you take or refrain from taking using or relying upon the information presented here is strictly at your own risk. You agree that neither the Company nor any of the authors, contributors, administrators, or anyone else associated with [protocols.io](https://dx.doi.org/10.17504/protocols.io.bksukwew), can be held responsible for your use of the information contained in or linked to this protocol or any of our Sites/Apps and Services.

Abstract

Interleukins (IL) are a type of cytokine first thought to be expressed by leukocytes alone but have later been found to be produced by many other body cells. They play essential roles in the activation and differentiation of immune cells, as well as proliferation, maturation, migration, and adhesion. They also have pro-inflammatory and anti-inflammatory properties. The primary function of interleukins is, therefore, to modulate growth, differentiation, and activation during inflammatory and immune responses. Interleukins consist of a large group of proteins that can elicit many reactions in cells and tissues by binding to high-affinity receptors in cell surfaces. [\[1\]](#)

The immunoregulatory cytokine IL-41 (also known as meteorin-like protein) is expressed at high levels in the synovium of patients with psoriatic arthritis (PsA).[\[2\]](#)

Reference

1. Justiz Vaillant AA, Qurie A. Interleukin. In: *StatPearls*. Treasure Island (FL): StatPearls Publishing; June 12, 2019.
2. Onuora S. Novel cytokine, IL-41, linked with PsA. *Nat Rev Rheumatol*. 2019;15(11):636. doi:10.1038/s41584-019-0314-7

- 1 An anti-human granulocyte macrophage-colony stimulating factor (GM-CSF) coating antibody is adsorbed onto the microwells by incubation overnight at 4°C with carbonate-bicarbonate buffer.
- 2 Add 50 µl of human serum or plasma into the wells. GM-CSF present in the serum sample binds to antibodies adsorbed into the microwells.
- 3 The microplate is blocked with 3% non-fat milk-PBS buffer and later wash to remove unbound proteins.
- 4 Fifty (50) µl of biotin-conjugated anti-GM-CSF antibody is added. The optimal dilution must be investigated.
- 5 The microplate is rewashed with PBS-Tween 20 buffer, pH 7.4.
- 6 One hundred µl of streptavidin-HRP conjugate is added and it binds to the biotin-conjugated anti-GM-CSF antibody.
- 7 The plate is washed following incubation to remove the unbound Streptavidin-HRP conjugate.
- 8 Add 100 µl of 3,3',5,5'- tetramethylbenzidine (TMB; Sigma-Aldrich) into each well.
- 9 Incubate the microwells in the dark for 15 min.
- 10 A colored product is formed in proportion to the quantity of GM-CSF present in the sample or standard.
- 11 The reaction is terminated by addition of 100 µl 3M H₂SO₄ and the absorbance is measured at 450 nm.
- 12 A standard curve is made from 7 human GM-CSF standard dilutions and the human GM-CSF sample concentration is determined.



- 13 For better results place the microplate on a microplate shaker in every incubation.