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

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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

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DISCLAIMER:

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 H_2SO_4 and the absorbance is measured at 450 nm.

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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.

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