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Neopterin EN 2021 V01

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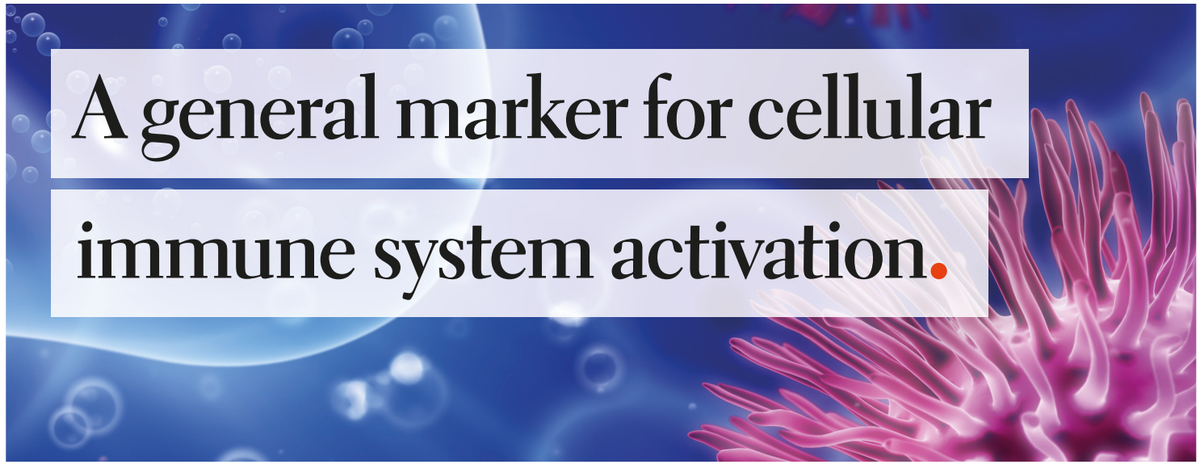
Neopterin ELISA.

IMMUNOLOGY / CYTOKINES



A general marker for cellular immune system activation.

An increase in Neopterin concentration marks the onset of an infection in the body before antibodies are present. As soon as the immune system is triggered by interferon-γ, Neopterin is released by macrophages (Figure 1).

PRODUCT

RE59321
Neopterin ELISA (CE, IVD)

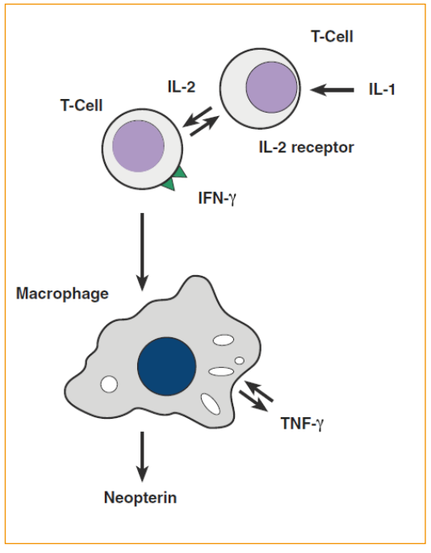


Figure 1: Release of Neopterin during cellular immune reaction.[1]

EARLY DETECTION OF CELL IMMUNE REACTION

Elevated Neopterin can be measured and is useful as an aid for[1]:

- Early diagnosis of viral infections (e.g. **SARS-CoV-2**, HIV.)
- Differential diagnosis between viral and bacterial infections
- Autoimmune diseases (Sjörgren-syndrome, rheumatic diseases)
- Early indication of complications in allograft rejection episodes
- Follow-up control of chronic infections, therapy and treatment

The IBL International Neopterin ELISA is calibrated against the HPLC reference method. This calibration against external standards gives our products an extraordinarily high accuracy and precision from lot to lot.

Insights from Neopterin about the pathology of SARS-CoV-2
Synthesized upon stimulation of macrophages and dendritic cells, Neopterin is an early, well-characterized biochemical marker of an ongoing immune reaction to viral infection (Figure 2).[2]

There is evidence that Neopterin levels correlate with severity of COVID-19 progression and may be prognostic in COVID-19 patients.[3–4] The Neopterin ELISA kit sensitively detects Neopterin prior to clinical symptoms of infection and thus, may be a tool to support an early recognition of SARS-CoV-2 infection.

PROGNOSIS, PROGRESSION AND THERAPY CONTROL

Applications of Neopterin testing:

- Potential prognostic value in case of a COVID-19 infection
- Aid for the detection of viral infections before onset of antibodies e.g. IgG, IgM
- Monitoring the inflammation process
- Monitoring the efficacy of an immune stimulatory therapy

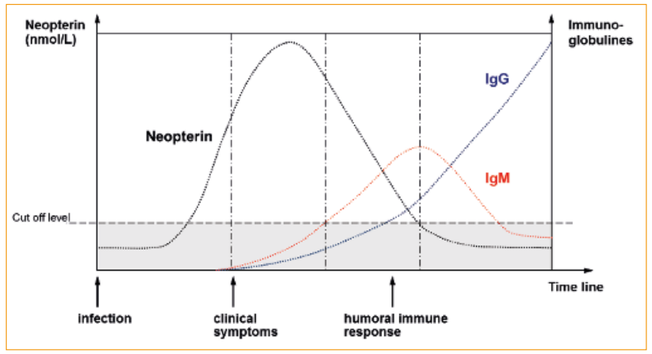


Figure 2: Schematic time course of Neopterin concentration in blood in relation to the rise and fall of antibody presence in response to viral infection.[2]

EASY TO PERFORM AND ACCURATE ELISA

The Neopterin ELISA is easy to perform,

manually or on open ELISA processors, e.g. DSX, Etimax, EVOlyzer® and ThunderBolt® (The combined use of assays, process script and instrument has to be validated individually on site by each laboratory.). Expected values of Neopterin in serum are depicted in Table 1.

Serum

nmol/L	ng/mL
> 10	< 2.5

Table 1: Normal values in serum measured in an apparently healthy population.

VERY GOOD CORRELATION TO HPLC

Key benefits:

- Very good correlation to HPLC (R^2=0.9974)
- Results within 2h
- Validated for serum, plasma (EDTA) and urine. Further bodily fluids for research applications

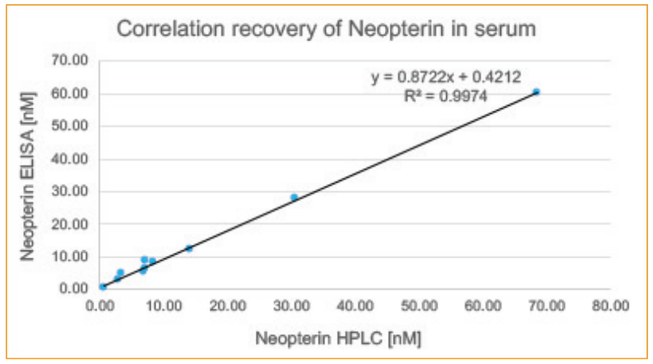


Figure 3: Method comparison between HPLC and IBL Neopterin ELISA (n=10, serum samples).

References:
1. Murr, C., Widner, B., Wirleitner, B., & Fuchs, D. (2002). Neopterin as a marker for immune system activation. Current drug metabolism, 3(2), 175-187.
2. Schennach, H., et al. (1994) Increased prevalence of IgM antibodies to Epstein-Barr virus and parvovirus B19 in blood donations with above-normal neopterin. Clinical chemistry 40: 2104. doi: 10.1128/CVI.00380-08
3. Robertson, J., et al. (2020) Serum neopterin levels in relation to mild and severe COVID-19. medRxiv. doi: 10.1101/2020.08.19.20178178
4. Ozger, H. S., et al. (2020). The prognostic role of neopterin in COVID-19 patients. Journal of Medical Virology. Doi: 10.1002/jmv.26472
5. Edén, A., et al. (2020) CSF biomarkers in patients with COVID-19 and neurological symptoms: A case series. Neurology. doi:10.1212/WNL.0000000000010977

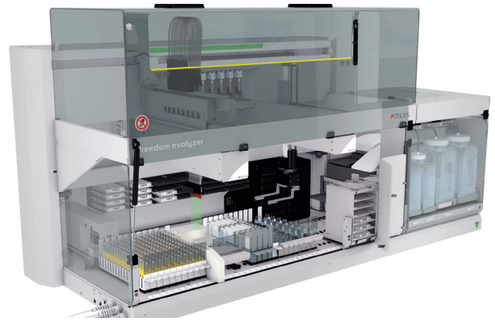


Figure 4: EVOLyzer®–Effective ELISA automation from Tecan