

Calprotectin

A promising biomarker for risk assessment and prognosis in COVID-19 patients

The value of calprotectin in COVID-19

- ➔ Calprotectin is elevated in COVID-19 patients¹⁻⁴
- ➔ Differentiation between mild and severe form of the disease^{1,2,5-8}
- ➔ Early identification of patients at the risk to develop multiorgan failure⁸
- ➔ Great prognostic value for need of mechanical ventilation, ICU admission, organ failure and mortality^{1,2,5,8}



Risk management in COVID-19 patient care

COVID-19 disease is caused by severe acute respiratory syndrome corona virus 2 (SARS-CoV-2) which triggers the hyperinflammatory response in patients with severe form of COVID-19 disease. Recent studies have identified neutrophils as drivers of severe events⁹ and a prominent signature of neutrophil activation, releasing calprotectin as the strongest early predictor of severe COVID-19^{1,2,5,8}.

Calprotectin levels are elevated in COVID-19 patients compared to controls¹⁻⁴, and importantly were significantly higher in severe compared to mild COVID-19 cases^{1,2,5-8}, regarding oxygenation status¹, need for mechanical ventilation¹, ICU admission^{2,6-8}, multiorgan failure (MOF)⁸ and mortality^{2,5,6,9}. Calprotectin was also described as sensitive predictive marker for need of mechanical ventilation¹, ICU admission^{2,8}, MOF⁸ and mortality^{2,5,8}.

GCAL® in clinical assessment

The Gentian GCAL® Calprotectin Immunoassay has been used in several clinical studies emphasising the clinical value of calprotectin in the care of COVID-19 patients. Serum calprotectin levels were elevated in COVID-19 patients³ and performed better than ferritin⁵, CRP^{5,8} and PCT⁸ as prognostic marker for ICU admission⁸, MOF⁸ and in-hospital mortality^{5,8}.

To conclude, plasma and serum calprotectin measurements in clinical routine can aid in the triage of COVID-19 patients and in times of limited resources, guide treatment decisions and improve overall patient outcome.

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Immunoassay performance

GCAL[®] is a Particle-Enhanced Turbidimetric Immunoassay (PETIA) that is rapidly performed in only 10 minutes. The assay can be applied on a wide range of automated clinical chemistry analysers. GCAL[®] is CE-marked.

Gentian Calprotectin Immunoassay Performance	
Sample type	Li-Heparin plasma, Serum
Assay type	PETIA
Format	Liquid reagents, ready to use
Precision (sample ≤ 1 mg/L)*	Total CV 8.2%
Precision (sample >1 mg/L)*	Total CV 4.0%
LoQ*	0.31 mg/L in Li-Hep plasma 0.30 mg/L in serum
Security zone*	Up to 95 mg/L
Measuring range*	0.41-20.26 mg/L in Li-Hep plasma 0.43-20.66 mg/L in serum
Calibration stability*	4 weeks [§]

*Instrument dependent results achieved on Architect c4000 during validation.

[§]Reagent blank adjustment must be done every 3 days.

Product range

Product no.	Product	Content
1201	Gentian Calprotectin Reagent Kit	R1 54 ml + R2 9 ml
1219	Gentian Calprotectin Control Kit	2 x 1 ml
1251	Gentian Calprotectin Calibrator Kit	6 x 1 ml



References:

1. Shi H, et al. J Leukoc Biol. 2020 Sep 1. Epub ahead of print 2. Chen L, et al. Cell Mol Immunol. 2020 Sep;17(9):992-994 3. Seiersen K., et al. AACCC2020 poster presentation 4. Wu M, et al. Proc Natl Acad Sci U S A. 2020;117(45):28336-43 5. Luis García de Guadiana Romualdo, et al. J Infect. 2020 Aug 12;50163-4453(20)30543-0 6. Silvin A, et al. Cell. 2020 Sep 17;182(6):1401-1418.e18 7. Sohn KM, et al. J Korean Med Sci. 2020 Sep 28;35(38):e343 8. Bauer W, et al. J Infect. 2020 Nov 17;50163-4453(20)30711-8 9. Barnes BJ, et al. J Exp Med. 2020 Jun 1;217(6):e20200652

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