PRODUCT PERFORMANCE:

- Versatility
- Validation
- Conjugation
- Reproducibility
- Broad portfolio
- Specificity and sensitivity
- Technical support
- Costs reduction and fast delivery

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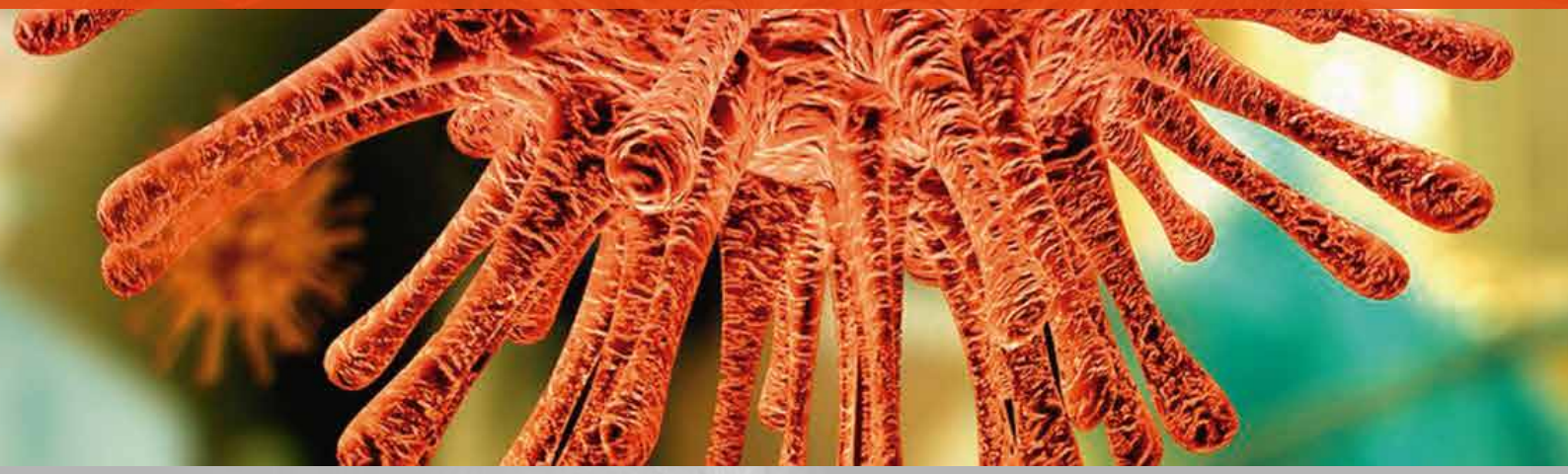
Rekom High-Quality Raw Material for COVID-19 IVD



REKOM RAW MATERIAL FOR SARS-CoV-2

NAME	CAT NUMBER	SOURCE	APPLICATION	DESCRIPTION
NP (CTD)	**RAG0071**	*E. coli*	WB, DB, IE, DE, CLIA, LF	SARS-CoV-2 nucleoprotein C-terminal domain
S1 (RBD)	**RAG0074**	*P. pastoris*	WB, DB, IE, DE, CLIA, LF	SARS-CoV-2 S1 Receptor Binding domain (RBD)

REKOM RAW MATERIAL FOR SARS-CoV (2003)

The nucleocapsid phosphoprotein (NP) of SARS-CoV-2 (COVID-19) is highly similar to SARS-CoV (2003). Therefore, with the NP protein from SARS-CoV (2003) in your serodiagnosis assay, your test will be able to detect the current coronavirus infections (COVID-19) as they share an identity of 94% and similarity of 97% in their amino acid sequence (see reverse).

NAME	CAT NUMBER	SOURCE	APPLICATION	DESCRIPTION
NP (CTD)	**RAG0080**	*E. coli*	WB, DB, IE, DE, CLIA, LF	SARS-CoV nucleoprotein C-terminal domain. **92.5% identity with NP COVID-19.**

WB: Western Blot
DB: Dot Blot
IE: Indirect ELISA
DE: positive control in direct ELISA
CLIA: Chemiluminescent Immunoassay
LF: Lateral Flow

Pack size: 0.1 mg*; 1 mg; bulk
Format: liquid; lyophilised
*under availability

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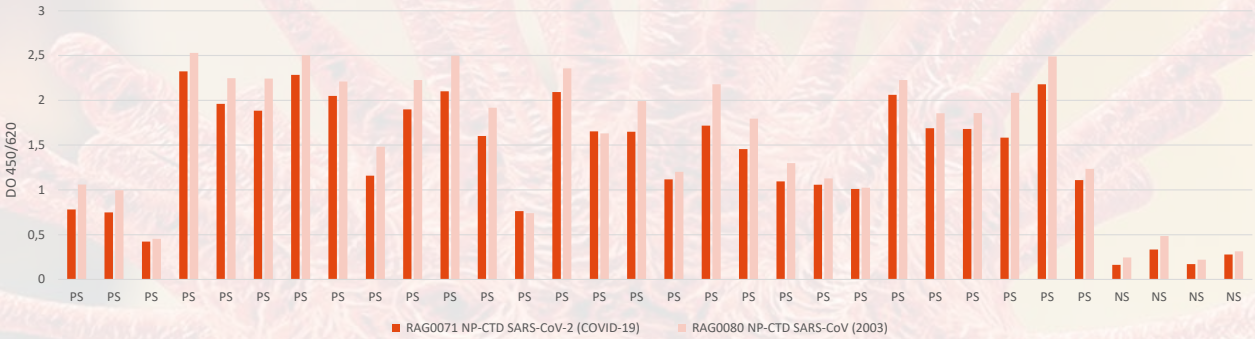

Fig. 1. An indirect IgG ELISA was performed with both NP (CTD) proteins: SARS-CoV (2003) and SARS-CoV-2 (COVID-19). PS means positive serum and NS means negative serum*.Immunol. Med. Microbiol 49: 13-21.

It seems that both proteins NP of SARS-CoV-2 (COVID-19) and NP of SARS-CoV-1 (2003) contain the same antigenic determinants and show the same antigenic characteristics (sensitivity 96.5% and specificity 100%). These results are coherent to an article in our blog (*https://www.rekombiotech.com/en/blog/detection-covid-19*), where an alignment shows that the two proteins share an identity of 94% and a similarity of 97% in their amino acid sequence. This identity makes both proteins able to bind the same antibodies in the sera samples.

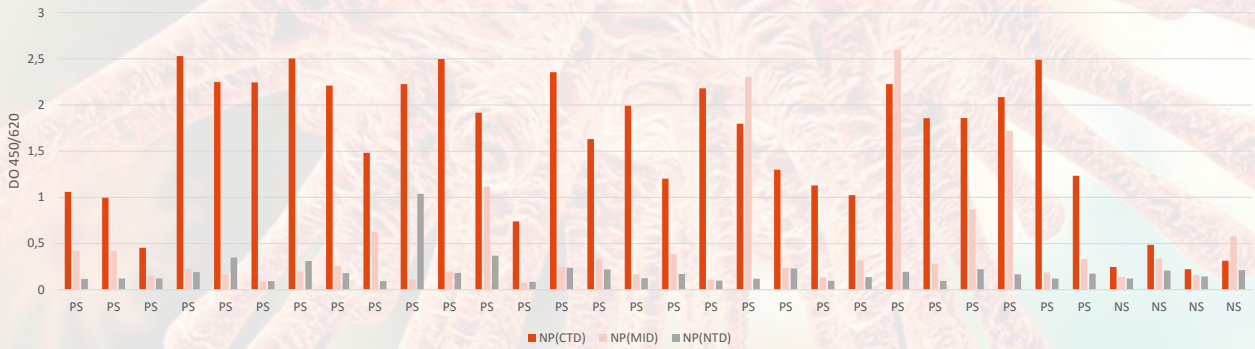

Fig.2. An indirect IgG ELISA was performed with different fragments from nucleocapsid protein. PS means positive serum and NS means negative serum*.

The nucleocapsid protein was truncated in three different fragments to increase the specificity of the resulted biomarker. These fragments correspond to the following amino acid sequences:

NAME	CAT NUMBER	AMINO ACIDS	SENSITIVITY
NP (NTD)	**RAG0082**	2-132	3.7 %
NP (MID)	**-**	110-219	21.4 %
NP (CTD)	**-**	213-398	96.5 %

These ELISA experiments show that the antigenic determinants of the nucleocapsid are located mainly in the C-terminus of the protein. The positive serum not detected by the NP(CTD) protein, is not recovered by the other fragments. Therefore, on a preliminary basis, it seems that the MID and NTD fragments would not be able to recover this 3.5% of loss of sensitivity detected with the CTD fragment. Maybe, a chimeric complex with another protein from SARS-CoV-2 (COVID-19) would increase its sensitivity till 100%.

Although the S protein was highlighted as the favourite antigen for diagnostic purposes for being essential for the entrance of the virus to the host cells, this protein has also been converted in the main focus regarding vaccination trials. As it is of utmost importance to have the possibility to distinguish the antibodies that are elicited by infection from the ones produced by vaccination, we, at Rekom Biotech, are focused in the improvement of the NP (*https://www.rekombiotech.com/en/blog/diagnostic-covid-19-asymptomatic*). This protein is a suitable candidate for raising antibodies for diagnostic applications, a potent immunogen and the most abundant virus-derived protein throughout the infection.

* Positive ELISA pre-validated IgG sera for COVID were obtained from the biobank of the Andalusian Public Health System (Spain). Negative specimen sera were obtained from the general population before the COVID outbreak in 2020.

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