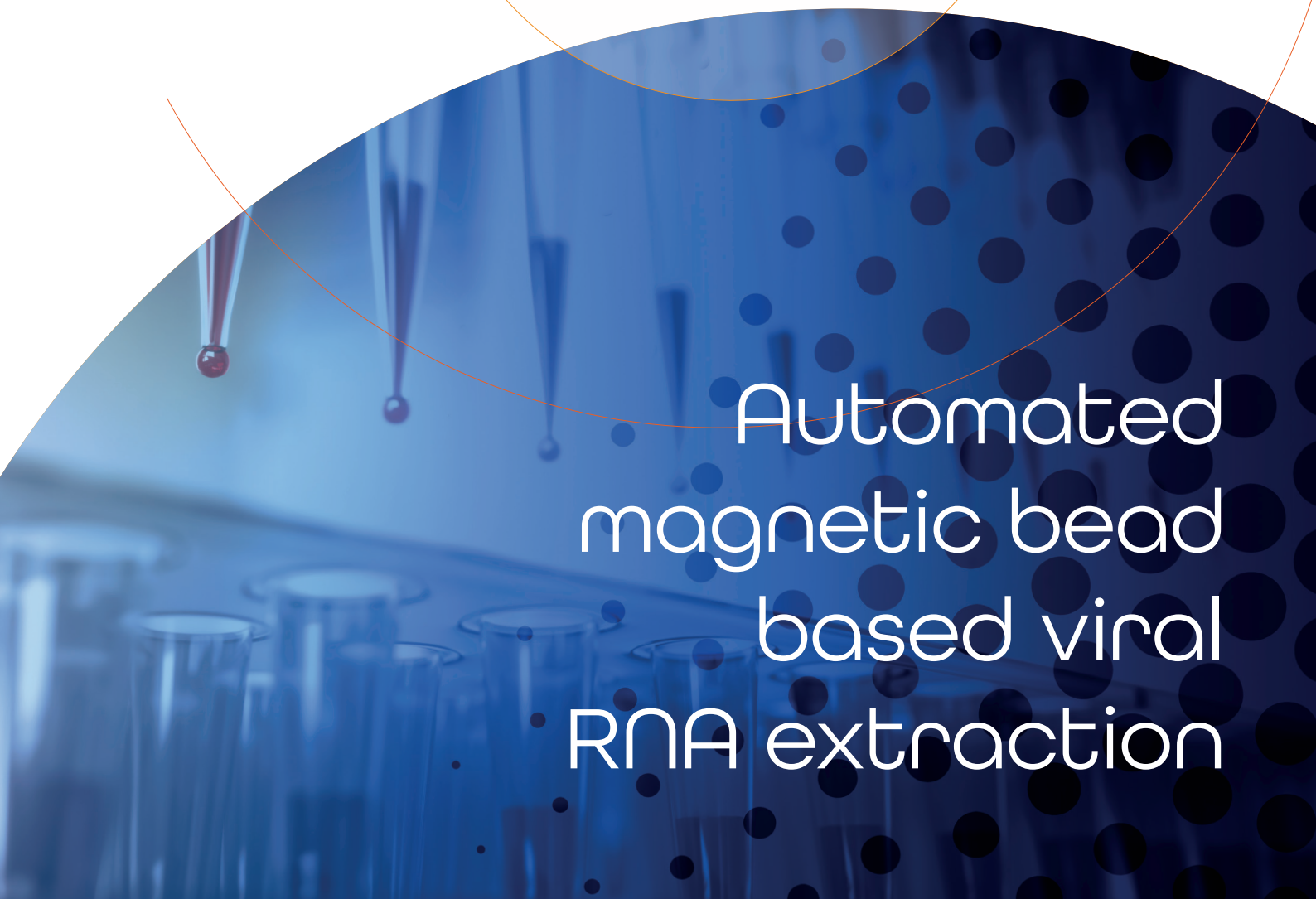
CleanXtract 96 and Clean Viral

RNA Swab Kit



Automated magnetic bead based viral RNA extraction

Reliable and large-scale viral RNA extraction

Large-scale virus research and identification are booming fields, even more so after the rise of the Coronavirus. Scientists need information about viruses and their possible variants to implement new solutions and combat the disease. CleanNA offers an optimized combination of our Clean Viral RNA Swab kit and our benchtop workstation CleanXtract 96 to purify the viral RNA.

Our Clean Viral RNA Swab Kit helps scientists extract viral RNA from nose or throath swabs with the specially formulated lysis buffer and elution in nuclease free water. By combining the kit with our CleanXtract 96 liquid handling workstation, easy scaling up to a maximum of 96 samples per run is possible. The UV-decontamination module on the CleanXtract 96 prevents sample cross contamination, enabling scientists to generate results they can trust.

Benefits:

- **Little hands on time**
- **High throughput**
- **Suitable for PCR**
- **Fast and efficient**

Application

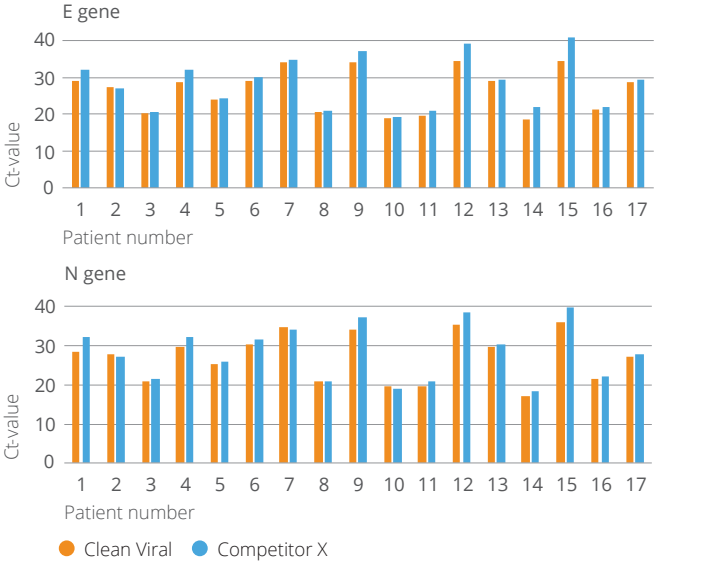
SARS-CoV-2 research is an important application of the CleanXtract 96 system in combination with the Clean Viral RNA Swab Kit, but certainly not the only one. The system and kit can be used for many respiratory tract infections with swabs in either Universal or Virus Transport Medium, extracting the RNA for PCR or NGS experiments. Not only with existing viruses, but also with new variants that will appear over time.

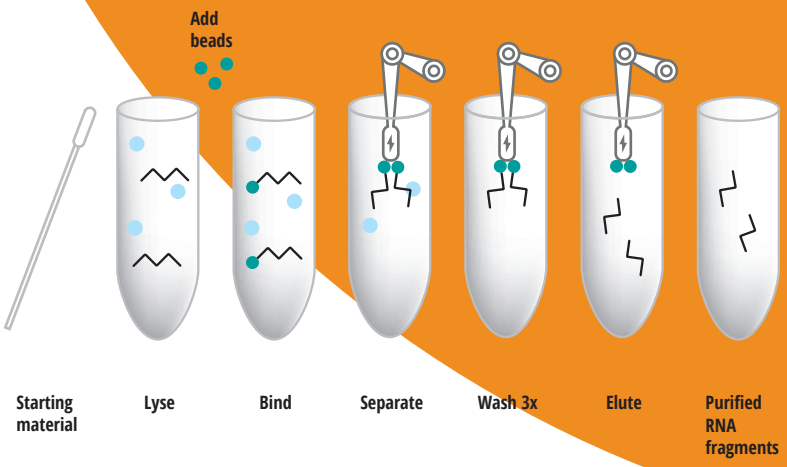
Proof of principle

A qPCR for the detection of SARS-CoV-2 for 18 negative (data not shown) and 17 positive patients was performed. We compared the Clean Viral RNA Swab Kit on the CleanXtract 96 with the Competitor X extraction kit on their instrument. We added primers for E and N genes of SARS-CoV-2 to the qPCR master mix (Corman, V.M., Landt, O., et al. (2020)). Our Clean Viral kit has a lower Ct-value for most patients, by using only 200 µl input volume, compared to 300 µl for competitor X's kit (Figure 1). The elution volume is similar.

FIGURE 1.

qPCR (with Fast 1-step RT qPCR mix) for detection of E and N genes of SARS-CoV-2 after Clean Viral RNA Swab Kit and Competitor X extractions.





Workflow

First, the comb of the CleanXtract 96 mixes the sample in the lysis buffer with the binding buffer. In this step, the RNA binds to the magnetic beads. The CleanXtract 96 magnet in the comb separates the magnetic beads from the lysates and transfers them to the next plate. After a few rapid wash steps to remove trace contaminants (e.g. proteins and cellular debris), the instrument elutes the RNA in nuclease free water in the final elution plate.

In another experiment, we spiked negative swabs collected in Viral Transport Medium with non-infectious synthetic SARS-CoV-2 RNA. After making a 2 times dilution series, we extracted the RNA with the Clean Viral RNA Swab kit. N1 and N2 genes of SARS-CoV-2 were detected with an RT-PCR. For N1, the slope is -3,326, meaning that the PCR efficiency is 99,8%. N2 has a slope of -3,645 and a PCR efficiency of 88,1% (see Figure 2).

To check for cross contamination during the extraction procedure, we filled a 96-wells plate with SARS-CoV-2 RNA spiked nose swab samples and PBS (as negative samples) in a checkerboard pattern. After RNA extraction with the Clean Viral RNA Swab Kit, we performed a qPCR (with ProbeSure™ COVID-19 One Step RT-PCR). Random samples of the qPCR products on the 1 % agarose gel in Figure 2 show no contamination in the negative samples.

FIGURE 2.

RT-PCR (with ProbeSure™ COVID-19 One Step RT-PCR) results of N1 and N2 genes after extraction from a 2 times dilution series of SARS-CoV-2 spiked swabs.

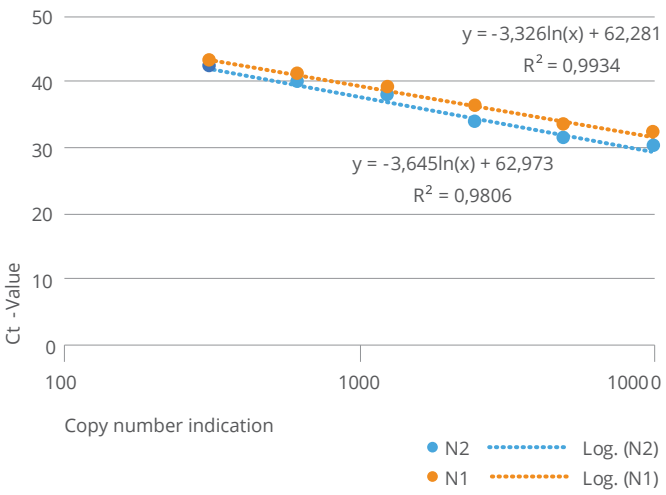
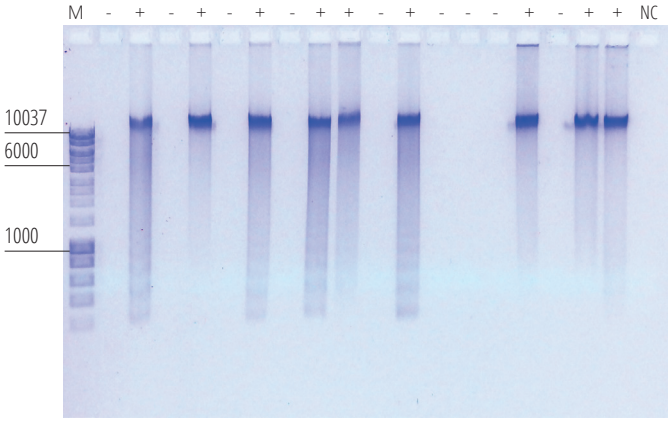


FIGURE 3.

Cross contamination test result of the extraction procedure on 1% agarose gel. M=1 kb Ladder (Bioline), + = positive sample, - = negative sample, NC = PCR negative control.



References:
Corman, V. M., Landt, O., Kaiser, M., Molenkamp, R., Meijer, A., Chu, D. K., Bleicker, T., Brünink, S., Schneider, J., Schmidt, M. L., Mulders, D. G., Haagmans, B. L., van der Veer, B., van den Brink, S., Wijsman, L., Goderski, G., Romette, J. L., Ellis, J., Zambon, M., Peiris, M., ... Drosten, C. (2020). Detection of 2019 novel coronavirus (2019-nCoV) by real-time RT-PCR. *Euro surveillance : bulletin Europeen sur les maladies transmissibles = European communicable disease bulletin, 25(3)*, 2000045. https://doi.org/10.2807/1560-7917.ES.2020.25.3.2000045

Isolation of nucleic acids becomes effortless with the CleanXtract 96. The clear interface, compact benchtop format, and see-through sides make the instrument easy to manage.

Specifications

Model	CleanXtract 96
Processing volume	50-1000 ul
Sample throughput	1 to 96
Operation Screen	10 inch touch
Size	65 x 61 x 41 cm
Net weight	40kg
Disinfection	UV lamp

About CleanNA

Isolation of nucleic acids often comes with challenges and CleanNA thinks that no researcher should have to face them alone. At our facilities in the Netherlands, we produce nucleic acid isolation kits and reagents. We offer complete solutions with magnetic beads that meet researchers' needs while significantly reducing their hands-on time.

Contact

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Ready to order?

Order via your local distributor or contact us via our details below.

Order info

Product	Preps	Part Number
Clean Viral RNA Swab Kit (24 x 96)	2304	CV-R2304

Product	Pack size	Part Number
CleanXtract 96	1 System	CXT-I096
96-Well Deep Well plate	50 pcs/box	503621
96-Well Comb	50 pcs/box	503361

The CleanXtract 96 and the Clean Viral RNA Swab Kit are distributed by: