

# TANBead Maelstrom™ 9600:

## Extraction system for diagnostic of SARS-COV-2

Comparative study with a commercial reference extraction system

### MAIN FEATURES

TANBead Maelstrom™ 9600 is a novel technology for applications in molecular diagnostics. The fully automated magnetic bead operating platforms use the magnetic rods within the equipment for nucleic acid isolation. The magnetic beads with nucleic acids adsorbed are automatically transferred from well to well for cell lysis, nucleic acid adsorption, washing, and elution. In contrast to laborious and prone to errors manual Spin Column operations, TANBead's automated extraction devices provide you a walk-away solution and effort-saving approach for processing multiple samples at the same time. Features of the system can be summarized as follows:



#### Fully Automated

- Temperature control modules to ensure the stability of the purification process.
- Simultaneous processing and purification of DNA and RNA samples.
- Automation of complicated manual steps.
- Pre-dispensed plates with all reagents ready to use.



#### Patented Whirl Stirring Mixing Technology

- Processing volume of 300 µl.
- Effective prevention of aerosol cross contamination.



#### Easy Operation

- Intuitive user interface and easy menu navigation.
- Lysis buffer included for SARS CoV-2 virus inactivation (15 minutes at room temperature).



#### Time Saving

- High-throughput: 96 samples can be processed simultaneously, 40 min after inactivation.



Maelstrom™ 9600  
CE IVD FDA

DIRECT SARS-COV-2 REALTIME PCR KIT is a product from Vircell to detect nucleic acid from SARS-CoV-2 in human respiratory samples. The TANBead's automated extraction process of SARS-COV-2 RNA in respiratory samples can be combined with the amplification kit from Vircell. The features of this REAL TIME PCR kit can be summarized as follow:

- **Double target assay:** specific for COVID-19 (*N* gene) and other SARS- related coronavirus (*E* gene).
- **Multiplex PCR-** one single reaction tube per sample.
- Suitable for FAM/Cy5/HEX (VIC) qPCR cyclers.
- **Endogenous human *RNAse P* control-** for detecting improper sample collection or degradation.
- **Lyophilized master mix and positive control** to ensure stability and reduce transportation costs.
- **Fast and reliable results in less than 2 hours.**



DIRECT SARS-COV-2 REALTIME PCR KIT  
CE IVD

# TANBead Maelstrom™ 9600: Extraction system for diagnostic of SARS-COV-2

## COMPARATIVE RESULTS

This study compared the results of 24 positive and 30 negative respiratory samples for SARS-CoV-2, extracted with OptiPure Viral AutoPlate (TANBead), run on Maelstrom M9600 instrument, and QIAamp Viral RNA Mini Kit (Qiagen) (used as a reference method). The samples were nasopharyngeal swabs collected in different transport media. Viral RNA was extracted according to manufacturer protocol, with the modification of an initial 15 minutes incubation protocol at room temperature. The lysis buffer was provided with the kit, in order to inactivate the samples.

The extraction efficiency from these two different extraction platforms was evaluated using RTPCR002-LP DIRECT SARS-COV-2 REALTIME PCR KIT (Vircell) on a CFX96 thermocycler (Bio-Rad). Results expressed as Ct values were plotted in figures on the right for each positive sample.

Detection of SARS-CoV-2 was determined by the detection of gene target E and N according to the RT-PCR kit instructions. Additionally, the internal human control (human RNase P) was reported in a comparative graph, and also as a correlation (dispersion graph).

The figures action methods was noticeable, showing linearity values of  $R^2 > 0.99$  for the correlations in all targets.

Results for negative samples showed no reactivity with any of the two extraction methods, showing a similar correlation for the internal human control (data not shown).

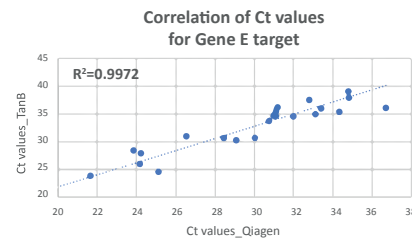
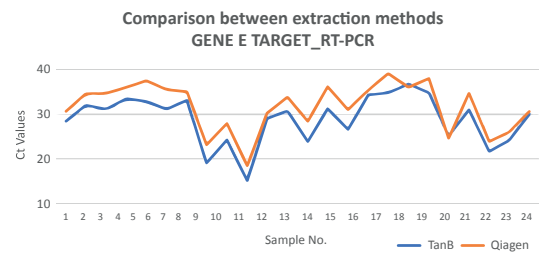
## CONCLUSIONS

TANBead OptiPure Viral Auto Plate system showed comparable results to the Qiagen commercial Spin Column reference kit considered as the gold standard for virus purification. Average earlier Ct values for TanBead kit could be explained by the different input and output volume used.

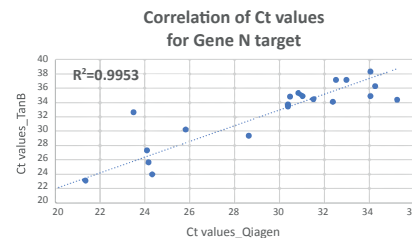
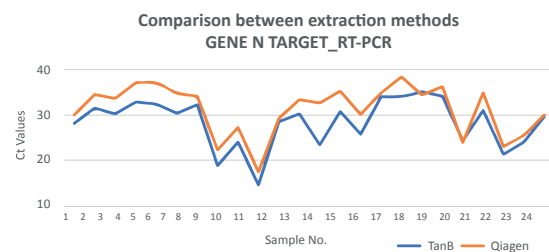
The advantages of the TANBead automated system, easy to use, and time saving, exceeded the features of a manual purification kit, preserving the accuracy and reliability of an RNA extraction kit.

The combination of DIRECT SARS-COV-2 REALTIME PCR KIT (96-well plate format, ref: RTPCR002-LPP) and Tanbead system can be used to run 96 samples in less than 3 hours, with a minimum manual manipulation of respiratory samples.

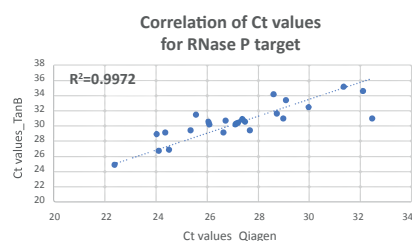
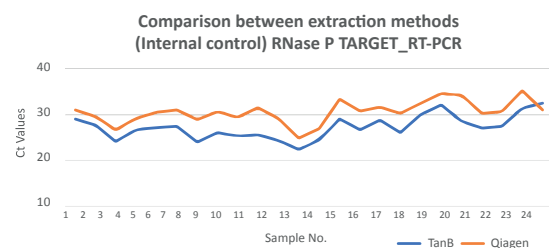
A



B



C



Figures: Comparison and correlations between extraction methods. The graph shows the values of Ct obtained after Real time RT-PCR. A for target E, B for target N and C for Human RNase P.