

NucleoMag[®] DNA/RNA Water

Automated DNA and RNA purification from water and air samples on the MagnetaPure 32



Nucleic acid isolation from water samples

The isolation of nucleic acids from water samples is becoming increasingly important in microbiological water research, drinking water safety and the monitoring of pathogenic wastewater. Typical applications range from genetic analysis (e.g. species identification/microbiomics) to the detection of waterborne pathogens spreading in water to the identification of contaminants and GMO testing.

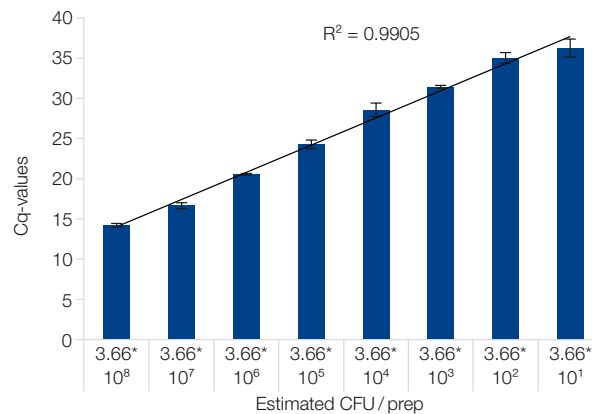
Extraction of water samples poses several noteworthy challenges. The first problem are low titres of microorganisms and viruses, so large sample volumes need to be processed to achieve sufficient sensitivity levels in downstream analysis. In addition, drinking and environmental water samples contain a variety of contaminants (PCR inhibitors such as humic acids) that interfere with molecular testing procedures, especially when large volumes of water are concentrated into the small quantities required for effective molecular analysis.

The MACHEREY-NAGEL NucleoMag[®] DNA/RNA Water kit uses optimized buffers for sample lysis and inhibitory substance removal, allowing efficient purification of highly pure DNA and RNA from clear to turbid water samples. Further, the NucleoMag[®] DNA/RNA Water kit is compatible with various concentration methods for viral particles (e.g Ultrafiltration, PEG precipitation or INNOVAPREP[®] Concentrating Pipette Select) and with a variety of filters, including conventional round filters (e.g., 25 mm to 47 mm) as well as with cartridge filters (such as Sterivex[™]).

NucleoMag [®] DNA/RNA Water	
Technology	Magnetic beads
Sample material	Air and water samples
Typical yield	Depending on amount and quality of sample
Elution volume	50 – 250 µL
Fragment size	300 bp–approx. 50 kbp
Preparation time	Approx. 40 min (excl. lysis)

MagnetaPure 32	
Description	Automated nucleic acid extraction instrument
Technology	Magnetic rods
Capacity	Up to 32 samples/run
Features	Compact Bench-top robot, ready-to-use NucleoMag [®] scripts, built-in UV lamp for decontamination, built-in heating block, open and flexible programming

Here we evaluate the qPCR performance of DNA extracted from *E.coli* contaminated water using the NucleoMag[®] DNA/RNA kit on the MagnetaPure 32 automated extraction robot.



Reliable *E.coli* DNA recovery from water samples

100 mL water samples were spiked with different dilutions of *E.coli* cultures ranging from 3.66*10¹ to 3.66*10⁸ CFU/preparation. Samples were filtrated via 50 mm PORAFIL CM (0,45 µm) filters and further processed according to the standard protocol of the NucleoMag[®] DNA/RNA Water kit using the MagnetaPure 32 automated extraction robot (n=4). qRT-PCR analysis of eluted DNA was performed with Boline SensiFast[™] SYBR Lo-ROX Kit using *E.coli*-specific uidA-primers (β-d-glucuronidase gene fragment) on an BioRad CFX96 Real-Time PCR System. Bacterial DNA was detected consistently and reliably over the whole range of dilution series with an excellent linearity (R² = 0.9905).

Product	Specifications	Pack of	REF
NucleoMag [®] DNA/RNA Water	Kit based on magnetic bead technology for the isolation of genomic DNA and RNA from water and air samples including NucleoMag [®] B-Beads and buffers**	96 preps	872156
		384 preps	872156

NucleoMag[®] a registered trademark of MACHEREY-NAGEL; SensiFast[™] is a trademark of Boline Reagents; Sterivex[™] is a trademark of Merck.

* CP-Select[™] is a trademark of INNOVAPREP; For more detailed information, please visit <https://www.innovaprep.com/>

** Plastics (reaction tubes/plates), MN Bead tubes / plates for sample homogenization and magnets must be purchased separately.