Bioanalysis

MACHEREY-NAGEL

An easy solution for plant health monitoring

NucleoSpin® Plant Pathogen

Catch Plant Infections before they spread!

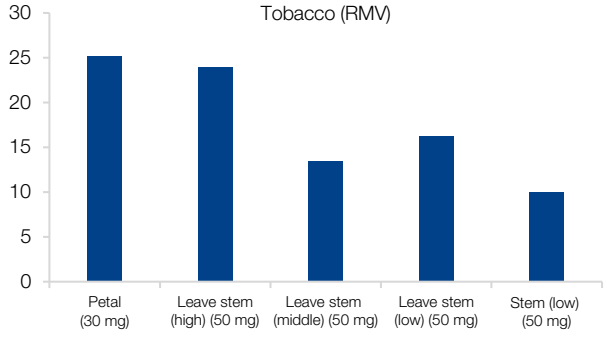
- Reliable isolation of plant pathogens
- Flexible lysis methods
- Early detection of plant infections

Catch plant infections before they spread!

NucleoSpin® Plant Pathogen

Rapid and accurate detection of plant infections through DNA/RNA extraction and PCR diagnostics.

Effective plant disease management begins with rapid and accurate detection—starting at the molecular level. Extracting high-quality RNA or DNA from infected plant tissues such as leaves, stems, or roots is essential for reliable results in qPCR, cDNA synthesis, and other downstream applications. The NucleoSpin® Plant Pathogen kit offers efficient isolation of viral nucleic acids from a wide range of plant materials, including challenging plant types like tobacco, pepper and hemp. Our kit provides consistent RNA/DNA yields per prep, ensuring dependable performance and sensitivity across complex plant tissues.



Isolation and detection of Tobacco Mosaic Virus (TMV) from various tobacco plant tissue

Tobacco mosaic virus was successfully isolated from leaves, stems, and tobacco petals. Viral nucleic acids were analyzed via specific qRT-PCR (TaKaRa One Step TB Green® PrimeScript™ RT-PCR Kit II)

Detect early. Protect better.

NucleoSpin® Plant Pathogen

Product features at a glance

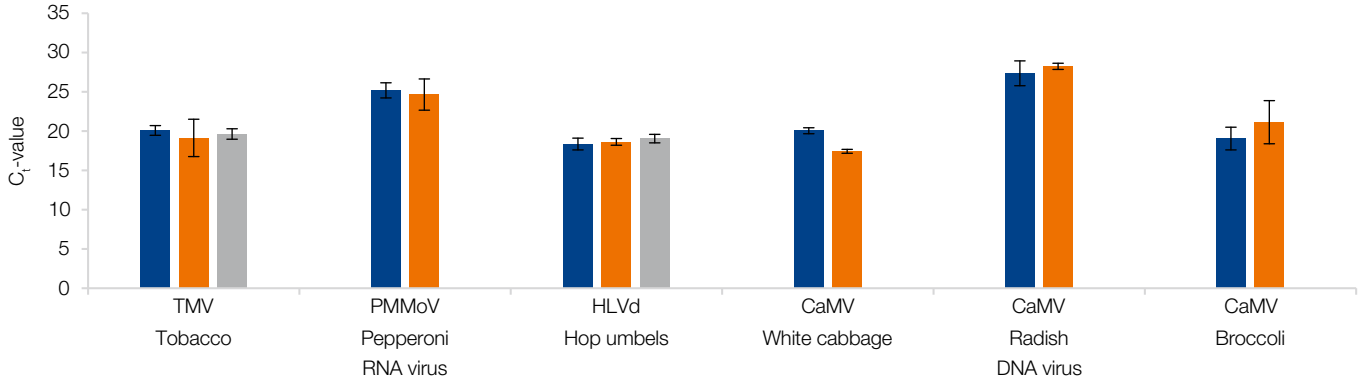
- All-in-one kit for plant infection diagnostics
- Flexible lysis procedure
- Tested for various viral pathogens and plant types
- Higher sensitivity compared to ELISA
- Optional: Sample stabilization with NucleoProtect® possible

Higher sensitivity compared to ELISA

	NucleoSpin® Plant Pathogen
REF	740170.10 / 740170.50
Technology	Silica membrane technology
Target	RNA/DNA (viral and plant)
Sample material	≤ 100 mg plant material (leaves, stem, roots)
Sample amount	20–200 µL PCR reaction mixture Up to 200 mg agarose gel
Preparation time	25 min / 6 preps
Elution volume	50 µL
Typical yield	Up to 20 µg total nucleic acid
Fragment size	> 200 nt
Typical downstream applications	qRT-PCR, cDNA synthesis, Northern Blotting
Selling unit	10 preps, 50 preps
Use	For research use only

Catch plant infections before they spread!

Isolation of viral pathogens from plant tissue samples



Efficiency of RNA/DNA Isolation from Diverse Plant Species

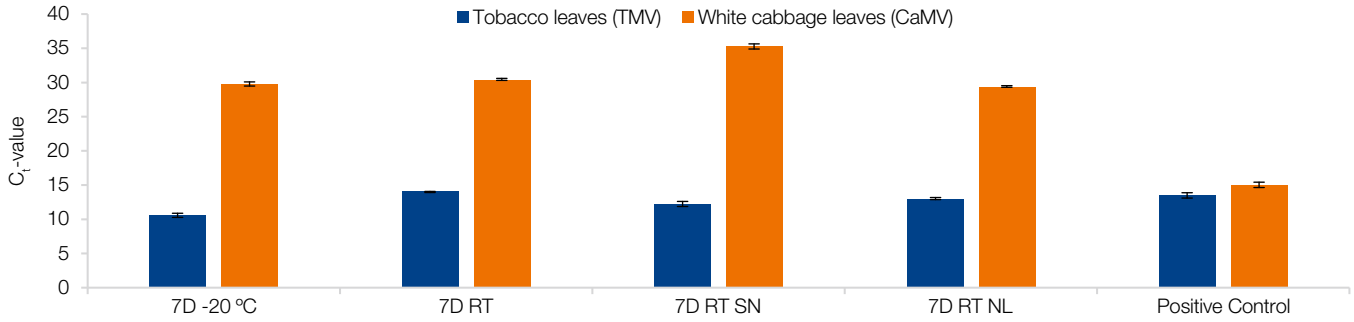
Isolation and detection of three plant viral pathogens (Tobacco Mosaic Virus (TMV), Pepper Mild Mottle Virus (PMMoV), Hop Latent Viroid (HLVd), Cauliflower Mosaic Virus (CaMV)) from five plant specis in duplicates or triplicates. Leaves and dried umbels were mechanically homogenized, lysed, and DNA/RNA extracted. Triplicate samples were analyzed using two PCR kits: Bioline SensiFast SYBR Lo-ROX One Step Kit and Takara One Step TB Green® PrimeScript™ RT-PCR Kit II for TMV, PMMoV, and HLVd; and TS Maxima SYBR Green qPCR MM for CaMV.

Serial Dilution	qPCR (C_t-value)	qPCR #2 (C_t-value)	ELISA	Rapid Test
Undiluted	8.1	8.1	+	+
$1:10^{-1}$	9.9	10.9	+	+
$1:10^{-2}$	13.9	14.4	+	+
$1:10^{-3}$	15.9	17.5	+	-
$1:10^{-4}$	19.1	20.5	+	-
$1:10^{-5}$	21.3	23.5	-	-
$1:10^{-6}$	24.4	27	-	-
$1:10^{-7}$	27.9	30.8	-	-
negative	40	37.6	-	-

Comparison of sensitivity limits between qPCR and ELISA

A comparative analysis of the sensitivity limits for detecting Tobacco Mosaic Virus (TMV) in tobacco leaf samples using qPCR, ELISA and Diagnostic Rapid Tests. A serial dilution was prepared from collected, infected tobacco leaf samples. qPCR shows higher sensitivity compared to ELISA alone.

Viral RNA/DNA stabilization in NucleoProtect® VET



Plant tissue stabilization and prolonged storage with no loss of signal

Viral RNA/DNA, such as TMV and CaMV, can be reliably isolated from infected leave stances stored in NucleoProtect® VET reagent at room temperature after at least one week. The quality and yield are comparable to those obtained from fresh or frozen samples. Notably, data indicate that either using just the supernatant (SN) without mechanical homogenization or no lysis buffer is enough to obtain a detectable signal by qPCR.

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Ordering information

Product	Pack of	REF
NucleoSpin® Plant Pathogen	10 / 50	740170.10 / .50
Lysis Buffer PFL	30 mL	740122.30
Reduction Buffer PFR	5 mL	740123.5
Wash Buffer PFW1	30 mL	74119.30
Wash Buffer PFW2 (concentrate)	50 / 200 mL	740939 / .1
NucleoSpin® Bead Tubes Type G	50	740817.50
MN 96 Bead Plate Type G	1 x 96 / 4 x 96	740855.1 / .4
Collection Tubes (2 mL)	1000	740600

Notes

Questions?

Contact the experts from MACHEREY-NAGEL technical support!

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