OPS DIAGNOSTICS

SYNERGY™ 3.0 MNP DNA Extraction Kit

Product No. SYNP 03-100-06

The SYNERGY™ 3.0 MNP DNA Extraction Kit utilizes a proprietary method to rapidly isolate high-quality DNA from plant or bacterial samples. SYNERGY™'s unique bead beating chemistry replaces laborious CTAB DNA isolation procedures requiring phenol/chloroform extraction. Each Homogenization Tube contains a grinding matrix which in conjunction with the Homogenization Buffer liberates DNA and captures contaminants from the sample. Magnetic Nanoparticles (MNPs) are then used to capture DNA.

Plants or related samples (50 mg) and Homogenization Buffer are placed in the 2 ml Homogenization Tubes and disrupted with a high velocity bead beater (e.g., HT Mini™ or HT 6™). During homogenization, the cell debris and PCR inhibitors bind to the grinding matrix and are subsequently removed by centrifugation, leaving the liberated DNA in the supernatant. While DNA can be directly used for standard PCR or downstream applications, plant samples containing high levels of phenolic compounds and polysaccharides should be further purified by simple alcohol precipitation or by capturing DNA on the magnetic nanoparticles and then eluting. The entire process, including additional purification steps, takes approximately 60 minutes.

Furthermore, OPS Diagnostics' application scientists can help with troubleshooting and questions. Visit our website to chat or send an email.

SYNERGY™ 3.0 MNP DNA Extraction Kit Materials:

- 60 ml Homogenization Buffer
- 60 ml Buffer VF1
- 60 ml Buffer VF2
- 20 ml Buffer EB1
- 3 ml Magnetic Nanoparticles (MNPs)
- Magnetic Stand
- 100 Homogenization Tubes
- 600 µl RNase A Solution
- Instructions

Additional Materials Required, but Not Included:

Isopropanol (2-propanol)
Ethanol (Ethyl alcohol)
High Velocity Bead Beater
Microcentrifuge
Microcentrifuge Tubes
Vortex Mixer
Thermomixer
Incubator

Notes Before Beginning:

Add 42 ml of Isopropanol to Buffer VF1 before use. Additionally, add 42 ml of pure Ethanol to Buffer VF2 before use. RNase A Solution should be stored at -20°C, while the Homogenization Buffer and all other components should be stored at room temperature. If Buffer VF1 contains precipitate, heat at 37°C until precipitate dissolves.

Related Products	Format	Product No.
IsoPure™ Mini	115 V / 230 V	BM – AP1016 / BM – AP1016 - E
SYNERGY™ 2.0 Plant RNA Extraction Kit	100 preps	SYNP 02-100-05
HT 6™	155 V / 230 V	BM – D1036 / BM -D1036E

If you have questions about this product, please contact us at OPS Diagnostics:

info@opsdx.com opsdiagnostics.com 908-253-3444 PO Box 348
Lebanon, NJ 08833

Protocol: Synergy™ 3.0 MNP DNA Extraction Kit

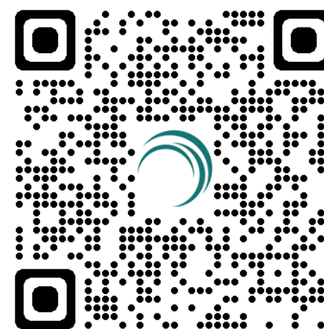
Manual Protocol

1. Add up to 50 mg of tissue and 500 µl of Homogenization Buffer to the 2 mL Synergy homogenization tube.
2. Place homogenization tube in the bead beater and homogenize sample at the highest speed for 1 minute. The tube will LACK foam if adequately processed, repeat if sample is not completely homogenized.
3. Centrifuge homogenization tubes for 5 minutes at 15,000 rcf to pellet grinding matrix and debris.
4. Transfer clear supernatant to microcentrifuge tube and add 5 µl RNase A. Incubate samples at 37°C for 15 minutes.
5. Vortex the MNPs vigorously for 30 seconds to ensure full suspension. Invert the tube and see if there is a pellet of MNPs at the bottom of the tube. If adequately suspended in solution, the MNPs will not be stuck at the bottom.
6. Add 25 µl MNPs and 400 µl pure EtOH. Vortex to mix beads throughout sample (about 10 seconds). Vortex for 5 minutes at 2700 rpm.
7. Pellet MNPs for 2 minutes on magnetic stand. Remove all the supernatant by pipette.
8. Add 500 µl of Buffer VF1 and vortex to resuspend MNPs. Vortex for 1 minute at 2700 rpm.
9. Pellet MNPs for 2 minutes on magnetic stand. Remove all supernatant by pouring and a pipette. Dry on magnetic stand with lid open for 3 minutes.
10. Add 500 µl of Buffer VF2. Vortex to resuspend MNPs. Vortex for 1 minute at 2700 rpm.
11. Pellet MNPs for 2 minutes on magnetic stand. Remove all the supernatant by pipette. Dry on magnetic stand with lid open for 10 minutes to remove all remaining alcohol.
12. Add 100 µl of Buffer EB1 and vortex to resuspend beads. Incubate beads in a thermomixer set to 70°C at 700 rpm for 5 minutes.
13. Briefly vortex each tube. Pellet DNA for 5 minutes on magnetic stand and transfer DNA (supernatant) to sterile microcentrifuge tube. Pipette SLOWLY and hold the MNP pellet right next to the magnet in the stand to ensure MNPs are not taken up. Store at -80°C if storage of samples is required.

Automated Protocol

Following homogenization, DNA can be isolated in as few as five steps in an automated system. Below are the steps. The QR code links to a page with more information and a protocol for the *IsoPure™ Mini.*

1. Transfer 170 µl of cleared lysate per well containing 5 µl RNase A. Mix for 15 min. at 37°C. Add 400 µl ethanol per well and mix.
2. Collect MNPs and transfer to the lysate well.
3. Mix at medium speed for 5 minutes.
4. Transfer MNPs to a new well with 500 µl Buffer VF1. Mix at medium speed.
5. Capture the MNPs and dry for 3 minutes.
6. Transfer MNPs to a new well with 500 µl Buffer VF2 and mix at medium speed.
7. Capture the MNPs and air dry for 10 minutes.
8. Transfer MNPs to a new well and elute in DNA in 100 µl Buffer EB1 pre-heated to 70°C with medium mixing for 5 minutes.
9. Remove MNPs from eluted DNA.



This product is made for research purposes only. Please follow safety and institutional guidelines when using this product.
Warning: Harmful if dust is inhaled. Buffer may cause irritation when in contact with skin and if swallowed.

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