

Technical Note

MagSi-DNA Vegetal III and KingFisher Flex

Description

The MagSi-DNA Vegetal III kit allows fast and cost-effective extraction of DNA from plant samples. The kit is optimized to extract DNA from plant samples with the highest purity and works well with plant leaf samples rich in secondary metabolites. The extraction chemistry is validated for many different plant species, and can be customized to meet any specific requirements of yields, purity, working volumes. The kit includes magnetic particles and can be easily automated on the KingFisher Flex magnetic particle processor (Thermo Fisher Scientific).

First, plant samples are homogenized by mechanical disruption and DNA is released from the cells in Lysis Buffer PL. After a centrifugation step to spin down sample debris, the cleared lysate is transferred to a deepwell plate for DNA extraction on the KingFisher Flex.

The KingFisher Flex instrument can process up to 96 samples in a single run. It uses magnetic rods that collect and transfer magnetic particles across microplates with a carousel-based design, eliminating the need for multiple pipette tips.

Carefully designed rod covers prevent from cross-contamination and allow for reproducible and efficient sample mixing and magnetic particle resuspension.

The instrument can be integrated with liquid handling workstations and most other lab equipment typically found in DNA extraction processes, providing a walk-away solution.

User notes

- KingFisher Flex protocols are available on request (email: info@magtivio.com)
- The instrument protocol is compatible with BindIt™ 4.0 software
- For tips and advice on how to adapt the instrument protocol for software of the KingFisher 96 or MagMax Express instruments, please email info@magtivio.com
- For further information about the MagSi-DNA Vegetal III kit, please refer to the Product Manual.
- MagSi-DNA Vegetal III is optimized for DNA extraction from plant leaves. For seed samples, Lysis Buffer PL can be exchanged with Lysis Buffer VG, offering a flexible solution for both sample types in a single extraction run.

Table 1. Reagents and equipment

Product	Art. No.	Required number per run
MagSi-DNA Vegetal III (96 preps)	MDKT00190096	-
MagSi-DNA Vegetal III (10x96 preps)	MDKT00190960	-
KingFisher Flex magnetic particle processor	5400620*	-
KingFisher Flex 96 Deepwell head	24074431*	-
2 ml Deepwell Plate with square wells for KingFisher™	MDPL00200060	4
200 µL square-well Elution Plate for KingFisher™	MDPL00190060	1
96 well Tip-Comb for KingFisher™	MDPL00210060	1

*supplied by Thermo Fisher Scientific

Importing the instrument protocol

To save the MagSi-DNA Vegetal III protocol to your KingFisher Flex instrument:

- Open the BindIt software
 - Press “Connect” and select the KingFisher Flex instrument that you want to save the protocol to
 - Press “Transfer...” and select the folder you want to save the protocol to, e.g. User Protocols – DNA/RNA
1. Press “Upload” and select the protocol that you want to import: “MagSi-DNA-Vegetal-III.bdz”
 2. Optionally choose your own name for the protocol, and press OK. The software will now transfer the protocol to your KingFisher Flex instrument

2. Grind the samples thoroughly, e.g. in a Geno/Grinder
3. Add 500 µL Lysis buffer PL to the sample material. Mix the samples on a plate shaker to increase lysis efficiency
4. Incubate samples at 65 °C for 30 min and then centrifuge 10 min at maximum speed to spin down cell debris
5. Transfer 400 µL plant lysate to the sample plate
6. Switch on the KingFisher Flex magnetic particle processor and select the “MagSi-DNA-Vegetal-III” protocol from the User Protocols
7. Start the protocol
8. Load the plates to the instrument, following the instructions on the instrument display
9. Make sure that all plates are inserted in the same orientation (especially when using partially filled plates). Place the A1 well of each plate to the A1 mark on the instruments turntable
10. At the end of the method remove all plates from the instrument. Follow the instructions on the instrument display

Protocol MagSi-DNA Vegetal III

1. Fill the plates as described in Table 2:
 - Sample Plate (MagSi-VG III and Binding Buffer VG only)
 - Wash Buffer I
 - Wash Buffer II
 - 80% ethanol
 - Elution Buffer

Table 2. Plate filling instructions for KingFisher Flex and MagSi-DNA-Vegetal-III protocol

Plate name	Plate type	Reagent	Volume
Sample Plate	2 ml Deepwell Plate with square wells for KingFisher™	Plant lysate Binding Buffer VG MagSi-VG III	400 µL 400 µL 30 µL
Wash Buffer I	2 ml Deepwell Plate with square wells for KingFisher™	Wash Buffer I	600 µL
Wash Buffer II	2 ml Deepwell Plate with square wells for KingFisher™	Wash Buffer II	600 µL
80% ethanol	2 ml Deepwell Plate with square wells for KingFisher™	80% ethanol	600 µL
Elution Buffer	200 µL square-well Elution Plate for KingFisher™	Elution Buffer	150 µL
Tip plate	2 ml Deepwell Plate with square wells for KingFisher™	Empty, for loading Tip-Comb only	-