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ONEMag™ Rapid Plant DNA Extraction Kit

(ONE-PLDNA-50)

Principle:

The **ONEMag™ Rapid Plant DNA Extraction Kit** utilizes magnetic bead–based purification technology for rapid isolation of genomic DNA from plant tissues. Plant cells are disrupted to release nucleic acids, followed by clarification to remove insoluble debris.

Under optimized binding conditions, genomic DNA selectively binds to silica-coated magnetic beads, while proteins, polysaccharides, secondary metabolites, and other contaminants remain in solution. The magnetic beads are separated using a magnetic field, allowing efficient removal of impurities through sequential washing steps.

Residual contaminants and inhibitors are eliminated during washing, and traces of alcohol are removed by a brief air-drying step. Purified DNA is then released from the magnetic beads under low-salt conditions and collected for downstream use. The isolated DNA is suitable for direct application in PCR, qPCR, restriction digestion, and next-generation sequencing workflows.

Kit Contents:

Components	**Quantity** **(50 Reactions)**
PL Buffer	40 mL
BB Buffer	30 mL
Magnetic Bead	3 mL
BW Buffer (Concentrate)	15 mL
BE Buffer	3 mL

Material's/Equipment's required but not Supplied:

- Ethanol (96–100%), Molecular Grade
- Micropipettes and sterile tips
- 1.5 mL microcentrifuge tubes
- Heating block or Water bath
- Vortex mixer
- Magnetic stand for 1.5/2.0 mL tubes

Storage Conditions:

All components of the **ONEMag™ Rapid Plant DNA Extraction Kit** should be stored at room temperature (~25°C). The kit is stable until the expiration date printed on the product label when stored under recommended conditions.

Preparation of Buffers

Preparation of BW Buffer

BW Buffer is supplied as a concentrate and must be diluted with ethanol before use.

Component	Volume for 50 Reactions
BW Buffer (Concentrate)	15 mL
Ethanol (96-100%)	45 mL
Final Volume	60 mL

Mix thoroughly and store at room temperature.

Protocol:

1. Add 700 µL of PL buffer to 50 to 100 mg of plant tissue and homogenize well.
2. Incubate at 65 °C for 15 minutes.
3. Invert the tube several times during incubation to mix the sample.
4. Centrifuge at 6,000 rpm for 10 minutes and transfer 400 µL of lysate to a new 1.5 mL tube.
5. Add 400 µL of BB buffer and vortex well.
6. Add 20 µL of magnetic beads and vortex thoroughly.
7. Incubate at room temperature for 5 minutes.
8. Place the tube on a magnetic stand and allow the beads to separate for 30 seconds.
9. Carefully discard the supernatant without disturbing the beads.
10. Add 500 µL of BW buffer and vortex well.
11. Place the tube on the magnetic stand for 30 seconds.
12. Carefully discard the supernatant.
13. Repeat the wash step once more (Steps 10–12).
14. Remove any residual buffer and air-dry the beads for 1 minute. Do not over-dry.
15. Add 50 µL of BE buffer, vortex briefly, and incubate at room temperature for 5 minutes.
16. Place the tube on the magnetic stand for 1 minute, then transfer the eluted DNA to a new tube and store at –20 °C.

Troubleshooting Guide:

Problem	Possible Cause	Recommended Solution
Low DNA yield	Incomplete tissue disruption	Ensure plant tissue is finely homogenized before extraction
	Insufficient binding time	Increase incubation time during DNA binding step
	Over-drying of magnetic beads	Reduce air-drying time to ~1 minute
Poor DNA purity	Incomplete removal of contaminants	Ensure thorough mixing during wash steps
	Carryover of wash solution	Completely remove supernatant after magnetic separation
Ethanol contamination in eluate	Insufficient bead drying	Extend air-drying slightly before elution
Magnetic beads in eluate	Incomplete magnetic separation	Allow additional time on the magnetic stand before transfer
Low downstream performance (PCR inhibition)	Residual inhibitors from plant tissue	Perform washes carefully and ensure complete removal of wash solution
Degraded DNA	Improper sample storage	Use fresh or properly stored plant material and avoid repeated freeze–thaw cycles
Variable results between samples	Inconsistent sample input	Use similar tissue amounts and processing conditions for all samples