AFTSpin Universal Plant Fast DNA Extraction Kit

Cat. No. : RK30111

Product components

Components	Component number	Size 50 RXN
RNase A (10 mg/mL)	RM30149	550 μL
Buffer DL1 Plus	RM30150	25 mL
Buffer DL2	RM30151	7.5 mL
Buffer DL4	RM30152	21 mL
Buffer EB2	RM30153	10 mL
Buffer DW2	RM30154	12 mL
Spin Column 4	RM30187	50 pk
2 mL Collection Tubes	RM30188	50 pk
1.5 mL Microcentrifuge Tubes	RM30595	50 pk

Product Description

This kit is suitable for rapid and simple extraction of genomic DNA from various fresh plant tissues or cultured plant cells. The extracted genomic DNA fragments are large with high purity and stability and can be directly used for PCR, digestion, hybridization and others. The extraction process does not require phenol/chloroform extraction. Fresh or frozen plant tissue cells are ground and then lysed and centrifuged by lysate. Proteins, polysaccharides and cell fragments are precipitated and removed by centrifuge at high speed. Under the optimized binding conditions, genomic DNA can be specifically bound to silica membrane of Spin Columns 4. Then, washing steps can further remove the residual proteins, salts and other impurities, and finally DNA is eluted from the silica membrane into Buffer EB2.

Storage Conditions

This kit can be stored for 12 months at room temperature (15-25°C) under dry conditions.

Product Features

1. There is no need to use toxic reagents such as phenol/chloroform, mercaptoethanol or DTT, and the extraction process is safe and non-toxic.
2. Simple and convenient operation, no need to water or ice baths, single tube extraction can be completed within 30 minutes at room temperature.
3. Widely applicable and the extraction of various plant samples has been verified.
4. Obtaining high-quality and pure nucleic acid that meets various downstream experimental needs.

Notes

1. Avoid repeated freeze-thaw cycles of samples, as this may result in shorter DNA fragments and reduced extraction yield.
2. Buffer DL1 plus may turn yellow; this does not affect its extraction performance.
3. If precipitation is observed in Buffer DL1 Plus or Buffer DL2, incubate in a 37°C water bath to redissolve, then shake well before use.
4. All centrifugation steps should be performed at room temperature using a tabletop centrifuge.
5. For plants with exceptionally high levels of polysaccharides and polyphenols, add 2% PVP-40 and 0.2% β-mercaptoethanol (self-supplied) to Buffer DL1 plus.
6. The pH of the elution buffer significantly affects elution efficiency; when using water as the eluent, ensure its pH is maintained between 7.0-8.5 (adjust with NaOH if necessary), as elution efficiency markedly decreases when pH falls below 7.0.

E-mail:info@abclonal.com

Operating Procedures

Self prepared materials

Absolute ethanol, 1.5 mL sterilized centrifuge tubes, PVP-40 (optional), β-mercaptoethanol (optional).

Preparation before experiment

Before first use, please add 27 mL of absolute ethanol to Buffer DL4 bottle and 48 mL of absolute ethanol to Buffer DW2 bottle.

Operating steps (please read the precautions first)

1. Sample processing: Grind fresh or dried plant tissue into powder using liquid nitrogen

   Note: For DNA extraction, use less than 100 mg of fresh plant tissue or less than 20 mg of dried plant tissue per tube; select the appropriate tissue quantity for liquid nitrogen grinding based on downstream DNA requirements. Samples ground with liquid nitrogen should be stored at -70°C if not used immediately, and repeated freeze-thaw cycles must be avoided.

2. Transfer 100 mg of freshly ground plant tissue or 20 mg of dried plant tissue to a 1.5 mL centrifuge tube (self prepared), and immediately add 400 μL **Buffer DL1 Plus** and 10 μL **RNase A (10 mg/mL)**, vortex for 2 minutes until the sample and solution are fully mixed, and leave at room temperature for 10-15 min.

   Note: 1) Ensure thorough mixing to prevent sample clumping, which compromises genomic DNA yield; 2) Do not exceed the kit's processing capacity to avoid incomplete lysis — for high-moisture samples (e.g., strawberries, watermelons), sample quantity may be moderately increased; 3) For tissues exceptionally rich in polysaccharides/polyphenols, supplement Buffer DL1 Plus with 2% PVP-40 and 0.2% β-mercaptoethanol.

3. Add 130 μL **Buffer DL2**, vortex for 1 minute to ensure thorough mixing, then centrifuge at 12,000 rpm (13,400 × g) for 5 min, and carefully transfer an appropriate volume of the supernatant to a new centrifuge tube.
4. Add **Buffer DL4** (add 27 mL of absolute ethanol to the bottle for the first use) equivalent to 1.5 times the supernatant volume. For example: add 600 μL Buffer DL4 to 400 μL supernatant, immediately shake thoroughly and mix for 15 sec, at which point flocculent precipitation may occur.
5. Transfer the entire mixture (including precipitate) to the Spin Column 4 (placed in a Collection Tube). Centrifuge at 12,000 rpm (13,400 × g) for 30 sec. Discard flow-through, then return the Spin Column 4 to the Collection Tube. (Spin Column capacity is ~700 μL; load solution in batches if exceeding volume.)
6. Add 500 μL **Buffer DW2** (add 48 mL of absolute ethanol to the bottle for the first use) to Spin Column 4. Centrifuge at 12,000 rpm (13,400 × g) for 30 sec. Discard flow-through and return the Spin Column to the Collection Tube.
7. Repeat step 6 once.
8. Centrifuge at 12,000 rpm (13,400 × g) for 3 min. Discard waste liquid in the Collection Tube.
9. Transfer Spin Column 4 to a new 1.5 mL centrifuge tube. Open the lid and air-dry at room temperature for 2-3 min. Add 60-100 μL **Buffer EB2** directly onto the center of the adsorption membrane, leave at room temperature for 2-5 min. Centrifuge at 12,000 rpm (13,400 × g) for 1 min to collect DNA solution.

   Note: For increased DNA yield, reapply the eluate to Spin Column 4, incubate at room temperature for 2 min, then centrifuge at 12,000 rpm for 1 min. Use ≥60 μL Buffer EB2 – smaller volumes compromise recovery efficiency.

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