

The Plant Genomic DNA Extraction HE (High Efficiency) Mini Kit is an efficient tool to rapidly isolate pure, high-concentration genomic DNA from a wide variety of plant types, including bryophytes, pteridophytes, gymnosperms, and angiosperms. It also enables effective DNA extraction from various plant organs without interference from polyphenols and polysaccharides. The distinctive HE Column allows to enlarge sample input and reduce elution volume to obtain both higher eluted DNA concentration and yield. The optimized washing steps efficiently remove contaminants, inhibitors, and salts, ensuring an excellent OD 260/230 ratio. The purified DNA is ready for a range of downstream applications, including genetic diversity, phylogenetic studies, GMO detection (food safety analysis), molecular breeding, and more.

**Specifications**

Format/Principle: Spin column (silica matrix)

Sample Wet weight : ≤ 125mg

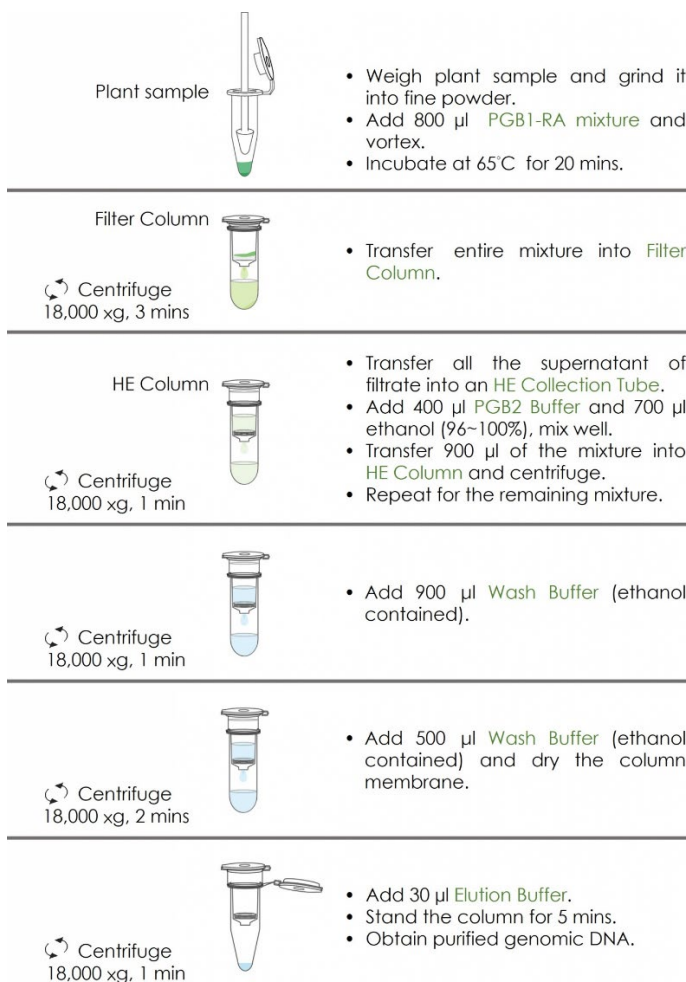
Binding Capacity: ≤125 µg DNA/Column

Operation Time: <50 mins

Sample Size: ≤125 mg

DNA yield: ≤40 µg

Elution Volume: 30 µl



Kit Components	DE-1033-HEs	DE-1033-HE50	DE-1033-HE100
PGB1 Buffer	5 ml	50 ml	100 ml
PGB2 Buffer	2 ml	25 ml	50 ml
Wash Buffer (Concentrate) ▲	3 ml	17.5 ml	35 ml
Elution Buffer	0.5 ml	5 ml	7 ml
RNase A Solution	100 µl	900 µl	900 µl × 2
Micropestles	4 pcs	50 pcs	50 pcs × 2
Filter Columns	4 pcs	50 pcs	100 pcs
HE Columns	4 pcs	50 pcs	50 pcs × 2
HE Collection Tubes	8 pcs × 2	100 pcs × 2	100 pcs × 4
Elution Tubes	4 pcs	50 pcs	100 pcs
▲ Volume of Ethanol for Wash Buffer	12 ml	70 ml	140 ml

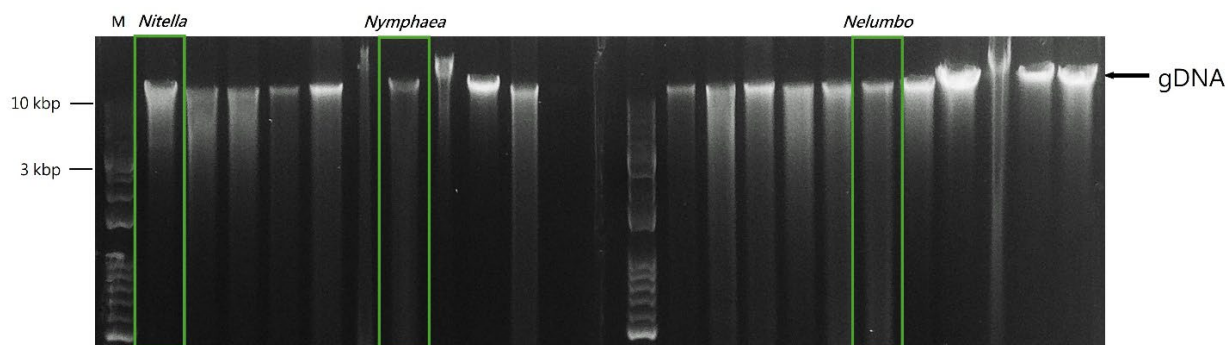
• **Preparation Before Starting**

1. Buffers provided in this system contain irritants. Wear gloves and lab coat when handling these buffers.
  2. Additional materials: 96~100% ethanol,  $\beta$ -Mercaptoethanol ( $\beta$ -ME).
  3. **(Optional)** For long-term DNA storage, immerse the plant tissue in our Preservation Solution.
  4. Set up a water bath or dry bath at 65°C and preheat the Elution Buffer to 65°C for elution step.
  5. Check **PGB1 Buffer** before use. If precipitates are observed, vortex PGB1 Buffer until precipitates are completely dissolved.
  6. Fresh preparation of **PGB1-RA mixture**, premix 800  $\mu$ l of **PGB1 Buffer**, 16  $\mu$ l of **RNase A Solution** and 2  $\mu$ l  $\beta$ -ME per sample before executing DNA extraction.
  7. Add indicated volume of ethanol (96~100%) into **Wash Buffer**, mix well and store at room temperature.
  8. Caution:  $\beta$ -ME is hazardous to human health. Always perform procedures involving  $\beta$ -ME in a fume hood.
- **Note:** All centrifugation steps should be performed at **18,000  $\times$ g** at room temperature.
  - **Note:** Avoid disturbing the pellet or debris while transferring the supernatant.

**\*Recommendation for Marine Plants:** \*To obtain high-quality DNA from marine plants, liquid nitrogen is recommended to disrupt the tough cell walls of algae. Please ensure that the sample is thoroughly ground into a fine powder before extraction.

**General Protocol**

1. Grind 50 mg of wet weight (up to 125 mg) plant tissue or 20 mg (up to 50 mg) dry weight of plant tissue under liquid nitrogen to a fine powder and transfer to a new microcentrifuge tube (not provided).
- Do not allow the sample to thaw and continue immediately to step 2.
2. Add 800  $\mu$ l **PGB1-RA mixture** to the tube and vortex thoroughly.
3. Incubate mixture at 65°C for 20 mins and vortex occasionally during incubation.
- If the mixture gradually turns brown, stop the incubation process and proceed to step 4.
4. Place a **Filter Column** to an HE Collection Tube and transfer the entire mixture to the Filter Column.
5. Centrifuge for 3 mins, then transfer all the supernatant of filtrate carefully into a new **HE Collection Tube**.
6. Add 400  $\mu$ l **PGB2 Buffer** and mix thoroughly by pipetting.
7. Add 700  $\mu$ l ethanol (96~100%) and mix thoroughly by pipetting.
8. Place an HE Column in a new HE Collection Tube.
9. Transfer 900  $\mu$ l mixture carefully into the HE Column and centrifuge for 1 min. Discard flow-through.
10. Repeat step 9 for the remaining mixture and place the HE Column in a new HE Collection Tube.
11. Add 900  $\mu$ l Wash Buffer (ethanol contained) to the HE Column. Centrifuge for 1 min then discard flow-through.
12. Add 500  $\mu$ l Wash Buffer (ethanol contained) to the HE Column. Centrifuge for 2 mins to dry the membrane directly. Discard flow-through and HE Collection Tube.
13. **OPTIONAL for Marine Plants:** Add 500  $\mu$ l of Ethanol (96-100%) to HE Column centrifuge for 2 min. and discard the flow-through and stand the HE-Column for 5 min.
14. Place the HE Column in an Elution Tube, then add 30  $\mu$ l prewarmed Elution Buffer or ddH<sub>2</sub>O (pH 7.5~9.0) directly onto the membrane. Stand the HE Column for 5 mins
15. Important step! For effective elution, ensure that the elution solution is dispensed onto the membrane center and absorbed completely.
16. Centrifuge for 1 min to elute DNA.



Picture 1. Gel Electrophoresis using High Efficiency Plant gDNA Extraction Kit on plants *Nitella*, *Nymphaea*, *Nelumbo*

Sample	A260/A280	A260/A230	Yield
<i>Nelumbo nucifera</i>	1.73	1.3	6.3
<i>Camphora officinarum</i>	1.59	0.95	1.6
<i>Nymphaea tetragona</i>	1.71	1.45	2.5
<i>Trachycarpus fortunei</i>	1.73	2.1	5.5
<i>Chloris barbata</i>	1.79	2.13	5.5
<i>Panicum maximum</i>	1.75	2.05	8.0
<i>Zea mays</i>	1.79	2.17	7.5
<i>Syngonium podophyllum</i>	1.73	1.53	5.5
<i>Taxodium distichum</i>	1.78	1.75	1.5
<i>Nephrolepis exaltata</i>	1.76	1.40	12.5
<i>Bryum bicolor</i>	1.68	1.56	8.0
<i>Hyophila involuta</i>	1.61	1.53	8.5
<i>Nitella flexilis</i>	1.78	2.02	3.5

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