Biomiga

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# MgPure Magnetic Circulating Cell-Free DNA Purification

## Product description

The MgPure Magnetic Circulating Cell-Free DNA Kit is designed for efficient extraction of circulating DNA from 0.3–4 mL of human plasma or serum. Utilizing proprietary magnetic beads and an optimized buffer system, the kit ensures high recovery and purity of circulating DNA (typically 1–100 ng/mL in plasma). The purified DNA is ideal for downstream applications such as NGS, qPCR, and more.

## Specifications

| | |
|---|---|
| Cat# | M3291 |
| Size | 48 T / 96 T (4 mL of plasma sample can be extracted) |

## Kit Contents

| Contents | M3291-01 | M3291-02 |
|---|---|---|
| | 48 Preps | 96 Preps |
| Proteinase K (20 mg/mL) | 11 mL | 12 mL |
| Magnetic **B**ead Suspension | 6.5 mL | 13 mL |
| Lysis Buffer | 11 mL | 22 mL |
| Binding Buffer | 140 mL ×2 | 260 mL×2 |
| Wash Buffer I | 110 mL | 220 mL |
| Wash Buffer II | 22 mL | 44 mL |
| Elution Buffer | 8 mL | 15 mL |

## Storage

Stored proteinase K and Mgpure beads at 4℃. Store all other components at room temperature.

## Notes

1. Check each reagent (especially **Lysis Buffer** and **Binding Buffer**) for precipitation or turbidity before use.
If any solution appears turbid, **incubate at 40°C** until fully clarified.
2. Magnetic Beads Suspension should be stored at 4℃ Do not freeze.
3. There may be residual magnetic beads during elution, and inhalation of magnetic beads should be avoided as far as possible during absorption.
4. Use **human plasma or serum** that has **not undergone more than one freeze-thaw cycle** for optimal results.
5. Always wear **lab coats** and **disposable gloves** while handling reagents and samples to ensure safety.
6. This product is **intended for research use only** and **not for diagnostic or therapeutic purposes**.

## Before Starting

**Wash Buffer II must be diluted with absolute ethanol before use.**

- M3291-01: add 88 ml absolute ethanol (100%) to 22 ml Wash Buffer II concentrate to obtain 110 ml Wash Buffer II. Mix well after adding absolute ethanol.
- M3291-02, add 176 ml absolute ethanol (100%) to 44 ml Wash Buffer II concentrate to obtain 220 ml Wash Buffer II. Mix well after adding absolute ethanol.

## Procedure for manual isolation of cfDNA (4 mL plasma)

1. Add 200 µL **Proteinase K** and 4 mL plasma into a 15 mL centrifuge tube, mix it , then add 200 µL **Lysis Buffer,** mix it for a short time, and incubate at 60℃ for 20 min, during which it needs to be mixed for 2-3 times. At the end of the incubation, cool the tubes on ice and cool it for 5 min.
2. Add 5 mL **Binding Buffer** and 120 µL **Magnetic Bead Suspension** to the samples. Shaking to mix for 10 minutes.
3. Spin briefly to remove any solution in cap. Place the tube on magnet for 5 min, or until the solution clears and the beads are pelleted against the magnet. Discard supernatant.
4. Add 1 mL **Wash Buffer I** to the 15 ml tube and shake to mix for 20 s. Transfer the magnetic nanoparticles suspension to a new 1.5 mL tube and save the 15 ml tube.
5. Place the 1.5 ml tube on magnet for 1 min until the solution is clear. Use the supernatant in the 1.5 ml tube to rinse the saved 15 ml tube in step 4 and transfer any residual nanoparticles to the 1.5 mL tube, discard the lysis/binding tube. Place the 1.5 mL tube on magnet for 5 min, or until the solution clears and the beads are pelleted against the magnet. Discard supernatant.
6. Add 1 mL **Wash Buffer I** to the 1.5 ml tube and shake to mix for 1 min, the Place the 1.5 ml tube on magnet for 1 min until the solution is clear. Discard supernatant
7. Add 1 mL **Wash Buffer II** to the 1.5 mL tube and shake to mix for 1 min, the Place the 1.5 ml tube on magnet for 1 min until the solution is clear. Discard supernatant.
8. Repeat step 7.
9. Spin briefly and place the 1.5 mL centrifuge tube containing the bead solution into a magnetic rack, then discard supernatant.
10. Air dry the magnetic particles at room temperature for 2-5 minutes.

【Note】: Magnetic beads should not be over-dried, which will reduce the elution efficiency. If the room temperature is too low, the drying time can be appropriately extended).

11. Remove the tube from the magnetic rack and add 50 ~ 120 µL **Elution Buffer** to the dried centrifuge tube. Vortex to resuspend beads for 5 min , and pipet up and down to mix and rinse residual beads from the tube wall. Spin briefly, Place the 1.5 mL centrifuge tube containing the bead solution into a magnetic rack. Let stand for at least 1 min, until the solution is clear. Transfer the supernatant into a new 1.5 mL centrifuge Tube.
12. Store the cfDNA sample at -20 °C for short term storage, and -80 °C for long term storage.

**The following table shows the volume of reagents used for different volumes of plasma, which you can refer to.**

| Component | Volume of human plasma or serum | | | |
|---|---|---|---|---|
| | 300 µL | 1 mL | 2 mL | 4 mL |
| Proteinase K (20 mg/mL) | 15 µL | 50 µL | 100 µL | 200 µL |
| Volume of human plasma or serum | 300 µL | 1 mL | 2 mL | 4 mL |
| Lysis Buffer | 15 µL | 50 µL | 100 µL | 200 µL |
| Binding Buffer | 375 µL | 1.25 mL | 2.5 mL | 5 mL |
| Magnetic bead Suspension | 9 µL | 30 µL | 60 µL | 120 µL |
| Elution Buffer | 10 ~ 20 µL | 30 µL | 50 ~ 80 µL | 50 ~ 120 µL |