EchoCLEAN DNA Cleanup Kit – Protocols

for 1-step elimination of impurities and partial fractions from DNA solutions

This protocol has been developed to eliminate impurities (e. g., salts, phenol, nucleotides), oligonucleotides and double-stranded DNA fragments from DNA solutions. Depending on the chosen kit variant, DNA <50 bp, <100 bp, or <200 bp can be removed.

Materials and equipment needed

Use up to 100 µl sample. For samples less than 80µl dilute with DNAse free water or TE Buffer to a minimum of 80µl.

- Microcentrifuge with rotor for 1.5 and 2 ml reaction tubes*
- Vortexer
- One reaction tube (2 ml) per sample for column preparation
- One reaction tube (1.5 ml) per sample for elution and collection of the purified genomic DNA
- Pipets for 10 µl and up to 200 µl, corresponding pipet tips
- For fastest procedure PROTOCOL 1): Cap Puncher (BioEcho product no. 050-001-001)

Preparation before starting

- Set the microcentrifuge to 800 x g.*

PROTOCOL 1: Purification using the Cap Puncher

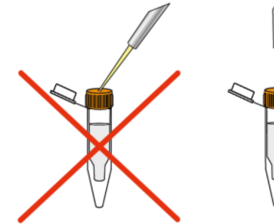
Column preparation

1. **Vortex the EchoLUTION Spin Column briefly,** place into a 2 ml reaction tube and both together in a rack.
2. **Use the cap puncher** (scan QR code to watch a video)**:** Punch a hole into the cap and lift the column together with the Cap Puncher out of the collection tube. Snap off bottom closure of the column and detach the Cap Puncher. Place back the spin column into the 2 ml reaction tube.
3. **Centrifuge for 1 min at 750 x *g*.** See section "Materials and equipment needed" above for details. Discard the 2 ml reaction tube containing the flow-through.
4. **Place the prepared spin column into a new 1.5 ml reaction tube** for elution of the sample and both together in a rack. **Continue with "Purification" (below).**

Purification

(1–2 minutes)

5. **Transfer 90 – 110 µl sample** containing the DNA to the prepared column from step 4 **as illustrated below:**
   Note: volume should be 90–110 µl, see section Materials and equipment needed for details.



Completely insert pipet tip vertically through the hole in the column cap and pipet the lysed sample slowly (~5 sec) into the column.

6. **Centrifuge 1 min at 800 x *g*.** The purified DNA (80–100 µl; 10 mM Tris·Cl, pH 7.8) flows through the column into the 1.5 ml elution tube. Discard the spin column.
7. **Flick or vortex the tube briefly** to ensure even distribution of the DNA in the eluate.
8. **The eluted genomic DNA can be used immediately or stored at 4°C or –20°C.** If samples need to be stored in the presence of small amounts of EDTA, adjust buffer conditions accordingly, e.g. by adding 10 µl of TE Buffer (10 mM Tris·Cl, 1 mM EDTA, pH 8.5).
9. **Before spectrophotometric analysis,** be sure that the concentration of salt in sample and blank are the same. Differences may influence the A_{260}/A_{230} purity ratio.

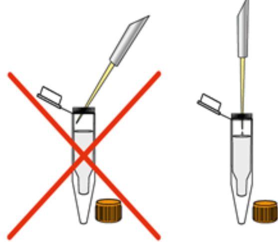
PROTOCOL 2: Purification without the use of a Cap Puncher

Column preparation

1. **Vortex the EchoLUTION Spin Column briefly,** place into a 2 ml reaction tube and both together in a rack.
2. **Loosen the screw cap of the spin column a half turn and snap off the bottom closure.**
   Important: Don´t close the screw cap of the spin column. The screw cap must stay loosened a half turn to avoid generation of a vacuum. Place back the column into the 2 ml collection tube.
3. **Centrifuge for 1 min at 800 x *g**.** Discard the 2 ml reaction tube containing the flow-through.
4. **Place the prepared spin column into a new 1.5 ml reaction tube for elution** of the sample and both together in a rack. **Continue with "Purification" (below).**

Purification (1–2 minutes)

5. **Transfer 90 – 110 µl sample** containing the DNA to the prepared column from step 4 **as illustrated below:**
   Note: volume should be 90–110 µl, see section Materials and equipment needed for details



Open cap and pipet the lysed sample **slowly (~5 sec) onto the center of the resin bed** of the prepared spin column. Close screw cap and **loosen again half a turn.**
Important: Don´t close the screw cap of the spin column tightly!

6. **Close screw cap and loosen again a half turn. Important: Don´t close the screw cap of the spin column tightly.**
7. **Centrifuge 1 min at 800 x *g*.** The purified DNA (80–100 µl; 10 mM Tris·Cl, pH 7.8) flows through the column into the 1.5 ml elution tube. Discard the spin column.
8. **Flick or vortex the tube briefly** to ensure even distribution of the DNA in the eluate.
9. **The eluted genomic DNA can be used immediately or stored at 4°C or –20°C.** If samples need to be stored in the presence of small amounts of EDTA, adjust buffer conditions accordingly, e.g. by adding 10 µl of TE Buffer (10 mM Tris·Cl, 1 mM EDTA, pH 8.5).
10. **Before spectrophotometric analysis,** be sure that the concentration of salt in the sample and the blank are the same. Differences may influence the A_{260}/A_{230} purity ratio.

Product use limitation

The EchoCLEAN DNA Cleanup Kits are for research use only. They have not been registered or authorized to be used for diagnosis, prevention or treatment of a disease.

* Most centrifuges offer the choice between rpm and g-force (rcf); if not, calculate the rpm corresponding to 800 x g using the formula: $rpm = 1000 \times \sqrt{\left(\frac{800}{1.12 \times r}\right)}$, where r = radius of rotor in mm. E.g., with a radius of 150 mm, the corresponding rpm to 800 x g is approx. 2200 rpm.

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for 1-step elimination of impurities and partial fractions from DNA solutions
(DNA exclusion limits: <50 bp | <100 bp | <200 bp)

Product no. <50 bp	**020-002-010-010**	**020-002-010-050**	**020-002-010-250**
Product no. <100 bp	**020-002-020-010**	**020-002-020-050**	**020-002-020-250**
Product no. <200 bp (rxn's)	**020-002-030-010** (10)	**020-002-030-010** (50)	**020-002-030-250** (250)
Kit contents	Spin Columns		

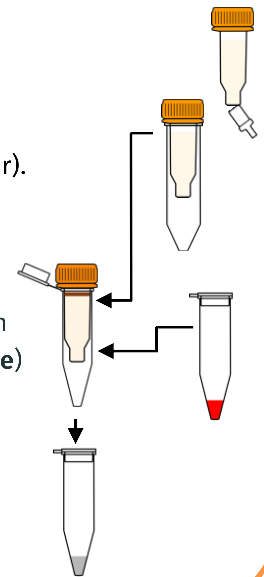
Quick PROTOCOL 1

Column preparation
- Homogenize suspension by vortexing.
- Place in a 2 ml tube, punch a hole in the cap using the Cap Puncher, and break off bottom closure (**scan QR code** to watch the handling of the Cap Puncher).
- Centrifuge 1 min at 800 *x g.*
- Place column in a 1.5 ml tube for elution.

Purification
- Transfer 90-110 µl of sample by pipetting slowly through cap hole – see PROTOCOL 1 or watch video (**scan QR code**)
- Centrifuge 1 min at 800 x g.

Purified nucleic acid
- 80–100 µl in Tris·Cl Buffer pH 7.8

Optional
- Add 1/100 volume (0.9 µl) TE Buffer (see protocol step 8)



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