A&A BIOTECHNOLOGY
innovating life science

*Manual*

# Micro RNA

Kit for microRNA purification.

| catalog # | size |
|---|---|
| 035-25 | 25 isolations |
| 035-100 | 100 isolations |

For research use only.

**Guarantee**
A&A Biotechnology provides a guarantee on this product.
The company does not guarantee the correct performance of this kit in the event of:

- not adhering to the supplied protocol
- use of not recommended equipment or materials
- use of other reagents than recommended or which are not a component of the product
- use of expired or improperly stored product or its components

# Table of Contents

# Specification

| | |
|---|---|
| **form** | minicolumn |
| **binding capacity** | 10 µg of RNA |
| **sample size** | • up to 3 ml of bacterial or yeast culture<br>• up to 2 ml of blood<br>• up to 1 x $10^6$ of cell culture<br>• up to 50 mg of plant or animal tissue |
| **elution volume** | from 100 µl |
| **elution solution** | ultrapure water |

# Contents

| | 035-25 | | 035-100 | | |
|---|---|---|---|---|---|
| **component** | **quantity** | **cat #** | **quantity** | **cat #** | **storage** |
| **Minicolumns** | 50 pcs | K-K01-50 | 200 pcs | K-K01-200 | 15–25 °C |
| **2 ml tubes** | 100 pcs | K-PGR-25 | 100 pcs | K-PGR-100 | 15–25 °C |
| **A1** wash solution | 50 ml | K-A1-50 | 200 ml | K-A1-200 | 15–25 °C |
| **Fenozol** | 25 ml | K-FEN-25 | 100 ml | K-FEN-100 | 2–8 °C |
| **Isopropanol** | 17 ml | K-IZO-17 | 80 ml | K-IZO-80 | 15–25 °C |
| **Ultrapure water** | 8 ml | K-WUP-8 | 40 ml | K-WUP-40 | -20–25 °C |

# Additional equipment and reagents

## Necessary

- 1.5 ml sterile Eppendorf tubes
- Chloroform
- Microcentrifuge
- Heatblock or incubator set to 50 °C

## Optional

- A1 wash solution, ultrapure water, RBCL
- 1.5 ml, 2 ml sterile Eppendorf tubes

# Important notes

When working with RNA, use RNAse-free consumables. Work sterile, use disposable gloves and change them whenever good laboratory practice requires it.

# Material preparation

## Bacterial / yeast culture

1. Centrifuge 1-3 ml of overnight bacterial culture / yeast culture. Discard supernatants.
2. Follow point 1. of the protocol for low RNA molecular weight.

## Cell culture

1. Centrifuge cell culture containing up to 1 x $10^6$ of cells. Discard supernatants.
2. Follow point 1. of the protocol for low RNA molecular weight.

## Plant / animal tissue

1. Homogenize tissue sample **(20-50 mg)** in liquid nitrogen.
2. Transfer the sample to 1.5 ml Eppendorf tube (not included).
3. Follow point 1. of the protocol for low RNA molecular weight.

## Fresh blood (not frozen)

1. Add the equivalent of five volumes of **RBCL** (not included) to **1-2 ml** of blood sample.
2. Mix and incubate on ice for **15 min**.
   Note the changing appearance of the sample during the incubation.
   The initially opaque solution should turn to a completely transparent ruby-red at the incubation end.
3. Centrifuge for **10 min** at **3000 x g.** Carefully discard supernatants.
4. Follow point 1. of the protocol for low RNA molecular weight.

# Isolation protocol for low RNA molecular weight

1. Add **800 µl** of **fenozol** and lyse cells by repetitive pipetting.

   Fenozol deactivates endogenous RNAses. Sample suspended in fenozol can be stored:
   - at -20 °C, -80 °C up to one year
   - from +2 °C to +8 °C up to one week
   - in room temperature up to 24 hours

   Fenozol contains phenol. Avoid contact with skin. Wear suitable protective gloves.

2. Incubate sample for **5 min** at **50 °C**.

3. Add **200 µl** of **chloroform** (not included) and gently mix by inverting the tube a few times.

4. Keep the sample for **3 min** at **room temp**.
   Centrifuge the sample for **10 min** at **10 000-12 000 RPM**.

   In the absence of separation into two phases (after centrifugation), mix and centrifuge sample once more.

5. Transfer the supernatant (**~ 450 µl**) to **a new** 1.5 ml tube (not included). Add **150 µl** of **isopropanol**.

6. Thoroughly mix and apply onto the minicolumn.

   High molecular RNA is bounded to minicolumn, while low molecular RNA is not bounded and is present in the tube.

7. Centrifuge for **1 min** at **10 000-12 000 RPM**.

   In order to recover high molecular weight RNA from minicolumn, proceed to isolation protocol for high molecular weight RNA.

8. Remove the minicolumn from the tube. Add **400 µl** of **isopropanol** to the filtrate

9. Mix by pipetting. Apply **500 µl** of **mixture** onto **the new** minicolumn (included).

10. Centrifuge for **1 min** at **10 000-12 000 RPM**.

11. Remove the minicolumn from the tube and discard the filtrate.
    Place the minicolumn into the same tube. Apply the remaining part of the mixtures onto the minicolumn.

12. Centrifuge for **1 min** at **10 000-12 000 RPM**.

13. Remove the minicolumn from the tube and discard the filtrate.

| | |
|---|---|
| | Place the minicolumn into the same tube. Add **700 µl** of **A1** wash solution. |
| 14. | Centrifuge for **1 min** at **10 000-12 000 RPM**. |
| 15. | Remove the minicolumn from the tube and discard the filtrate.<br>Place the minicolumn into the same tube. Add **700 µl** of **A1** wash solution. |
| 16. | Centrifuge for **1 min** at **10 000-12 000 RPM**. |
| 17. | Remove the minicolumn from the tube and discard the filtrate.<br>Place the minicolumn into the same tube. Add **200 µl** of **A1** wash solution. |
| 18. | Centrifuge for **2 min** at **10 000-12 000 RPM**. |
| 19. | Transfer the dry minicolumn to **a new** 1.5 ml elution tube (not included).<br>Add **100 µl** of ultrapure water directly onto the minicolumn resin. |
| 20. | Keep for **3 min** at **room temp.** |
| 21. | Centrifuge for **1 min** at **10 000-12 000 RPM**. |
| 22. | Remove the **minicolumn** and store the tube with purified RNA at **-20 °C**, **-80 °C** until later use. |

## Isolation protocol for high RNA molecular weight

A1 wash solution, ultrapure water, 1.5 ml, 2 ml tubes should be ordered separately.

| | |
|---|---|
| 1. | Transfer the minicolumn to **a new** 2 ml tube (not included). Add **700 µl** of **A1** wash solution. |
| 2. | Centrifuge for **1 min** at **10 000-12 000 RPM**. |
| 3. | Remove the minicolumn from the tube and discard the filtrate.<br>Place the minicolumn into the same tube. Add **700 µl** of **A1** wash solution. |
| 4. | Centrifuge for **1 min** at **10 000-12 000 RPM**. |

5. Remove the minicolumn from the tube and discard the filtrate.
Place the minicolumn into the same tube. Add **200 µl** of **A1** wash solution.

6. Centrifuge for **2 min** at **10 000-12 000 RPM**.

7. Transfer the dry minicolumn to **a new** 1.5 ml elution tube (not included).
Add **100 µl** of **ultrapure water** directly onto the minicolumn resin.

8. Keep for **3 min** at **room temp.**
Centrifuge for **1 min** at **10 000-12 000 RPM**.

9. Remove the minicolumn and store the tube with purified RNA at **-20 °C**, **-80 °C** until later use.

# Safety information

DANGER

### Fenozol

H301+H311+H331 Toxic if swallowed, in contact with skin or if inhaled.
H314 Causes severe skin burns and eye damage.
H341 Suspected of causing genetic defects.
H373 May cause damage to organs through prolonged or repeated exposure.
H411 Toxic to aquatic life with long-lasting effects.
P261 Avoid breathing dust.
P273 Avoid release to the environment.
P280 Wear protective gloves, protective clothing, eye protection, face protection.
P301+P310 If swallowed: immediately call a Poison Center or doctor/physician.
P305+P351+P338 If in eyes: rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310 Immediately call a Poison Center or doctor/physician.

DANGER

### Isopropanol

H225 Highly flammable liquid and vapor.
H319 Causes serious eye irritation.
H336 May cause drowsiness or dizziness.
P210 Keep away from heat, sparks, open flames, hot surfaces. No smoking.
P261 Avoid breathing vapors.
P305+P351+P338 If in eyes: rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

DANGER

### A1 wash solution

H225 Highly flammable liquid and vapor.
H319 Causes serious eye irritation.
H336 May cause drowsiness or dizziness.
P210 Keep away from heat, sparks, open flames, hot surfaces. No smoking.
P261 Avoid breathing vapors.
P305+P351+P338 If in eyes: rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

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