Tissue RNA Purification Kit PLUS

Catalog No.: EZB-RN001-plus

Description

The *EZ*Bioscience® Tissue RNA Purification Kit PLUS provides a simple, reliable, and rapid method for isolating high-quality total RNA from animal tissues, providing high sample processing capability to deal with difficult specimens. The purified total RNA is suitable for use in a variety of downstream applications, including: RT-PCR, RT-qPCR, Northern blotting, nuclease protection assays, cDNA library preparation after poly (A)+ selection, and so on. Besides total RNA isolation, this kit can also be used for microRNA and lncRNA purification from cells and tissue samples. Tissue samples are first lysed and homogenized in a strong denaturant and phenol containing buffer, which immediately inactivates RNases to ensure isolation of intact RNA. After homogenization, chloroform is mixed with the tissue lysate and incubated for 3 minutes. And then the mixture is centrifuged for phase separation; the upper-layer supernatant is collected and mixed with ethanol. The liquid is then passed through the RNA binding Spin Column containing a silica-based membrane to which the RNA binds. Impurities are effectively removed by subsequent washing. The purified total RNA is then eluted with Elution Buffer and may be used in a variety of downstream applications.

Components

Components	EZB-RN001-plus (100 Preps)
Lysis Buffer	60 ml
Wash Buffer 1*	13 ml
Wash Buffer 2*	13 ml
Elution Buffer	25 ml
Spin Columns (with Collection Tubes)	100 Preps

*Before using for the first time, add 52 ml of 100% ethanol to the Wash Buffer 1 and Wash Buffer 2 separately.

Storage

Store the Lysis Buffer at 2 ~ 8°C, protected from light. Store other components at room temperature (when using these buffers, be careful to avoid contamination). Dividing the Elution Buffer into small aliquots upon reception is suggested.

Protocol

Sample Homogenization

The suggested tissue weight according to tissue types:

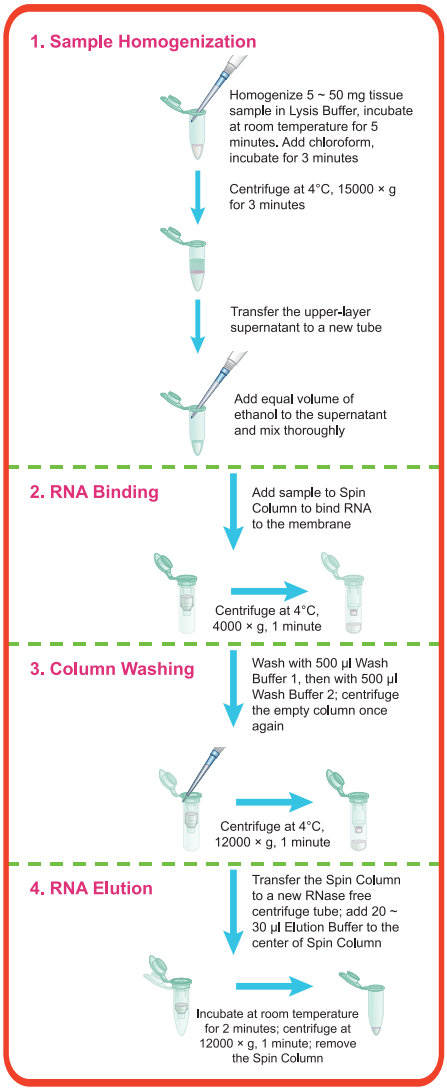
Tissue types	Liver	Tumor, embryos, heart, kidney, spleen, pancreas, lung, brain, eye	Muscle, skin, vessel	Adipose tissue
Weight (mg)	5~ 10	5~ 50	20~ 50	50

1. Place 1 ~ 100 mg tissue in a 1.5 ml centrifuge tube. Add 500 µl of Lysis Buffer (cell samples can be lysed in culture dishes directly).
2. Homogenize the tissue with a pestle or rotor-stator homogenizer. Incubate at room temperature for 5 minutes.
3. Add 100 µl chloroform to the tissue lysate, mix by pipette and hand-shaking. Incubate at room temperature for 3 minutes.
4. Centrifuge at 15000 × g (~13000 rpm), 4°C for 3 minutes. Then the mixture separates into three phases. Transfer the upper-layer supernatant (about 300 µl) to a new RNase free 1.5 ml centrifuge tube (be careful to avoid disturbing the middle or bottom layer).

RNA Binding

5. Add equal volume of 100% ethanol to each volume of supernatant for mRNA and lncRNA purifiaction. Add 1.6 volume of 100% ethanol to each volume of supernatant for microRNA purification.
6. Invert the centrifuge tube for several times or pipette up and down for 10 times to mix thoroughly, and transfer the sample to the Spin Column. Centrifuge at 4000 × g, 4°C for 1 minute. Pour off the liquid.

Experimental Procedure Overview



Column Washing

7. Add 500 µl of Wash Buffer 1 to the column. Centrifuge at 12000

× g, 4°C for 1 minute (be careful to avoid contacting the bottom of the column with the liquid when taking out of the column). Pour off the liquid.

8. Add 500 µl of Wash Buffer 2 to the column. Centrifuge at 12000 × g, 4°C for 1 minute.
9. Pour off the liquid and eliminate the residual liquid using towel paper. Place the empty column back on the collection tube and Centrifuge at 12000 × g, 4°C for 1 minute.
10. Don't need to pour off the liquid, directly transfer the column to an RNase free 1.5 ml centrifuge tube, open the lid and keep in the air for 2 minutes.

RNA Elution

11. Add 20 ~ 30 µl of Elution Buffer to the center of the column and incubate at room temperature for 2 minutes.
12. Centrifuge at 12000 × g, 4°C for 1 minute (transfer the eluate back to the column, incubate for 5 minutes and centrifuge once more will get more RNA).
13. Discard the column，determine the RNA concentration, do the following experiment with the purified RNA, or store the RNA at -80°C until needed.

Representative Results

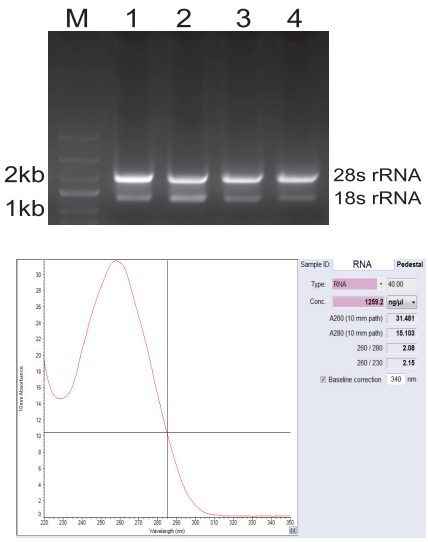


Figure 1. RNA isolated from 30 mg mouse muscle using *EZ*Bioscience® Tissue RNA Purification Kit PLUS and TRIzol (eluted in 30 µl of Elution Buffer each, 5 µl RNA of each is loaded for electrophoresis). M: 250bp DNA Ladder; Lanes 1 and 2: *EZ*Bioscience® Tissue RNA Purification Kit PLUS; Lanes 3 and 4: TRIzol; These results showed that more RNA can be isolated from the same amount of tissue by *EZ*Bioscience® Tissue RNA Purification Kit PLUS than TRIzol.

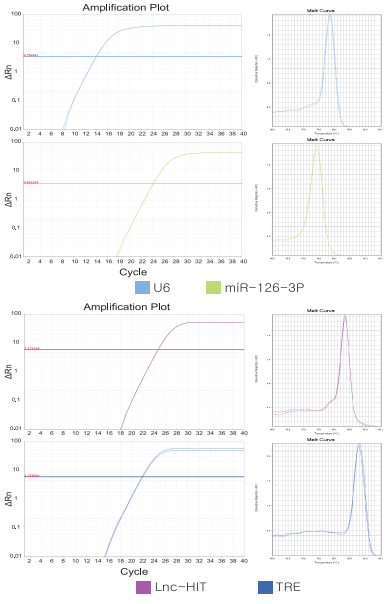


Figure 2. microRNA and lncRNA isolated from 293T cells are detected. These results showed that, this *EZ*Bioscience® Tissue RNA Purification Kit PLUS can be used for microRNA and lncRNA purification and achieved good performance.

Trouble shooting

The quantity of RNA purified by this Kit is too small, or the qPCR results is not so good, the Ct value is too large, or some specific genes can not be amplified normally.

Suggestions:

a. **Examine whether any of the reagents in the Kit is contaminated**: use a new Kit as positive control to confirm whether the reagents are contaminated (If the reagents are contaminated, the results between these two will be different, obviously). Therefore, **it is recommended to divide the reagents into 3 ~ 4 parts, each part in a 15 ml/50 ml centrifuge tube.** Be careful when taking the reagents out of the bottles to avoid contamination.

b. The gene specific primers for qPCR should be divided to aliquots and stored at -20°C, to decrease the possibility of degradation or contamination.

c. **Examine whether the experiment is carried out correctly.**

e.g.:

1. During the whole process of RNA purification by this Kit, **it must be manipulated at room temperature (unless specially required) but not on ice** (until the RNA is eluted after the centrifuge), to avoid of blocking the membrane in the Spin Column by the water-insoluble substances formed during ice cooling.
2. Before using this Kit for the first time, **add 52 ml 100% ethanol to each bottle of the Wash Buffer** and mix thoroughly.
3. The tissue pieces must be weighed before RNA extraction. The weight of tissue should be less than 100 mg/sample. For tissues rich in RNA (such as liver, spleen and thymus), the amount of tissue should be reduced to no more than 10 mg/sample.
4. Transfer the upper-layer supernatant to a new tube after phase separation. **Avoid transferring any of the middle or bottom layer into the pipette when removing the upper-layer.**
5. **Add equal volume of ethanol to the supernatant** and mix thoroughly, then load onto the column.
6. After each column washing, the column should be taken out carefully to avoid of contacting the bottom of column with liquid.
7. The column must be dried in air for 2 minutes after the centrifugation of empty column.
8. When doing the step of RNA binding and RNA elution, **load the flow-through of centrifugation to the column and repeat the centrifugation once again will get more RNA.**