GeneAll®

Catalog 2018/19

Innovative Life Science System

Customer & Technical Support

Should you have any further questions, do not hesitate to contact us.

We appreciate your comments and advice.

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About GeneAll

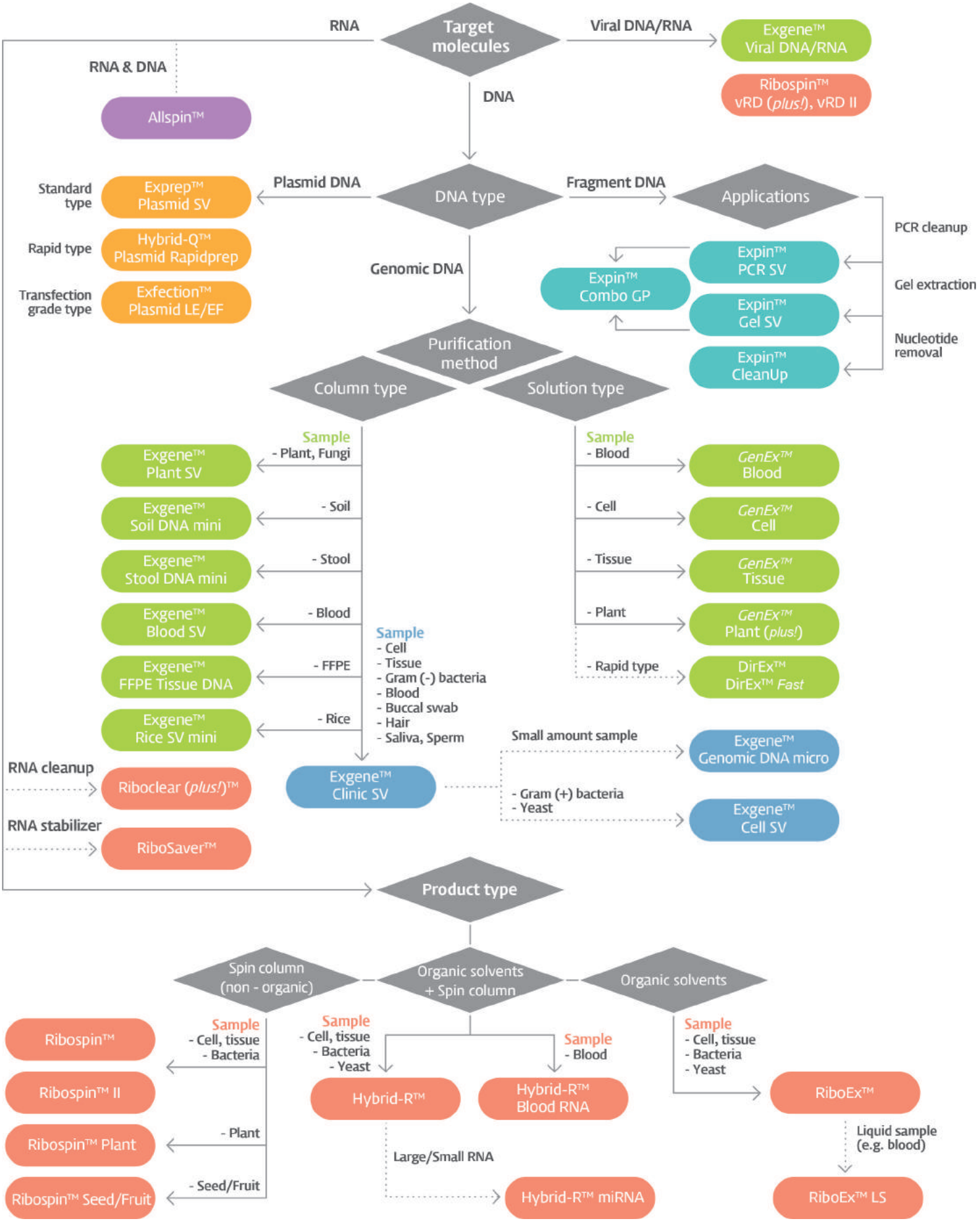
With the advance in molecular biological techniques, researchers have preferred the commercial ready-made kits to lab-made reagents in order to concentrate on doing research itself rather than making reagents. GeneAll® DNA and RNA Purification kit series are basic materials in molecular biological experiments and offer fast, accurate, convenient and reproducible methods. Every GeneAll® product is manufactured under strictly clean condition and controlled thoroughly from lot to lot, and we proudly guarantee the stable and consistent quality. GeneAll® SV column contains silica membrane that will bind DNA and easily apply to both centrifugation and vacuum protocols. Purification step is so simple, bind-wash-elute, that is all. Under high salt condition, DNA bind to silica membrane and impurities pass through membrane into a collection tube. The membranes are washed with an ethanol-containing buffer to remove any residual of proteins, cellular debris, salts, remnant of agarose, enzymatic reaction components and etc. Finally DNA is released into a clean collection tube with water or low ionic strength buffer.

GeneAll® 2018 / 19 Catalog

Visit www.geneall.com or www.geneall.co.kr for FAQ, Q&A and more information.

GeneAll® Kits Selection Guide

For DNA / RNA Purification System



Selection Guide

For RNA Purification

Hybrid-R™ / RiboEx™ / Ribospin™ / Allspin™ / RiboSaver™ Series

RiboEx™ series are designed for total RNA isolation from various samples. RiboEx™ is based on the disruption of cells in a monophasic lysis solution containing phenol and salt followed by alcohol precipitation of the RNA. Hybrid-R™ eliminates alcohol precipitation by binding of RNA with column. RiboEx™ LS is a concentrated form of RiboEx™ and for total RNA isolation from liquid samples, while RiboEx™ is more suitable for solid samples and pelleted cells. Riboclear™ provides an easy and rapid method for RNA cleanup or concentration from various RNA samples in just 6 minutes. Ribospin™ series provide fast and easy method in convenient spin column format and isolate highly purified RNA in 15 minutes. Allspin™ total DNA / RNA purification kit provides a convenient method for the isolation of total DNA and total RNA simultaneously from a single sample of tissue or cultured cells. RiboSaver™ is a preservation solution to stabilize cellular RNA in biological specimens such as tissues and cultured cells.

Sample Type	Hybrid-R™	Hybrid-R™ Blood RNA	Hybrid-R™ miRNA	RiboEx™	RiboEx™ LS	Ribospin™	Ribospin™ II *	Ribospin™ vRD (Plus) **	Ribospin™ vRD II **	Ribospin™ Plant	Ribospin™ Seed / Fruit	Riboclear™ (Plus) ****	Allspin™ ***	RiboSaver™
Animal cells	○	-	○	○	○	○	○	-	-	-	-	-	○	-
Animal tissues	○	-	○	○	△	○	○	-	-	-	-	-	○	-
Plant tissues	△	-	-	○	△	-	-	-	-	○	-	-	-	-
Bacteria	○	-	○	○	○	△	△	-	-	-	-	-	-	-
Yeast	○	-	○	○	○	△	△	-	-	-	-	-	-	-
Whole blood	-	○	-	-	○	-	-	-	-	-	-	-	-	-
Buffy coat	○	○	○	○	○	○	○	-	-	-	-	-	○	-
Seed	-	-	-	-	-	-	-	-	-	-	○	-	-	-
Fruit	-	-	-	-	-	-	-	-	-	-	○	-	-	-
Rhizome	-	-	-	-	-	-	-	-	-	-	○	-	-	-
Various liquid sample	-	△	-	-	△	-	-	△	△	-	-	-	-	-
Viral sample	-	-	-	-	-	-	-	○	○	-	-	-	-	-
RNA cleanup / concentration	-	-	-	-	-	-	-	-	-	-	-	○	-	-
RNA stabilization	-	-	-	-	-	-	-	-	-	-	-		-	○

○ Recommended / △ Recomended with additional preparation step

** Ribospin™ II provides DNase I for removal of contamination DNA. (on-column digestion under 10 minutes)*

*** Ribospin™ vRD Plus and vRD II provide carrier RNA for purification of nucleic acid from very small amounts of sample.*

**** Allspin™ provides the method for the purification of genomic DNA and total RNA from tissues and cultured cells.*

***** Riboclear™ Plus provides DNase I for removal of contaminated DNA.*

All columns in GeneAll® RNA related products are provided as individual packs (blister packs) to minimize the contamination.

04. RNA Purification System

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Hybrid-R™

For the isolation of total RNA from tissues and cultured cells

Description

Hybrid-R™ provides an easy and rapid method for the isolation of highly purified total RNA from samples of human, animal, plant, yeast, bacterial and viral origin. Hybrid-R™ eliminates alcohol precipitation by binding of RNA with column, allowing rapid and convenient preparation from a large number of samples simultaneously.

Hybrid-R™ can yield up to 500 μg depending on the type of tissue sample used and complete all process to prepare total RNA in just 30 minutes. The purified total RNA is suitable for the isolation of mRNA, northern blotting, dot blotting, *in vitro* translation, cloning, RT-PCR, RNase protection assays and other analytical procedures.

Features and Benefits

- Preparation time : ~ 30 minutes
- Accurate and consistent yield from animal tissue, cultured cell line, plant, *E. coli* and various biological samples
- High purity and yield
- No genomic DNA contamination
- No ethanol precipitation
- Ready for use in RT-PCR, northern blotting, dot blotting, *in vitro* translation, molecular cloning, real-time PCR, RNase protection assays and other analytical procedures

Hybrid-R™

Format : Column Type G
(with 2.0 ml collection tube)

Sample size : ~ 100 mg tissue or 1 x 10^7 cells

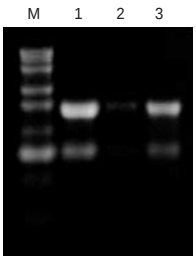
Application volume : ~ 700 μℓ

Min. elution volume : 30 μℓ

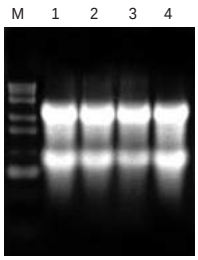
Binding capacity : ~ 500 μg

Cat. No.	Products	Type	Size
305-101	Hybrid-R™	Spin	100

RNA Purification Results I

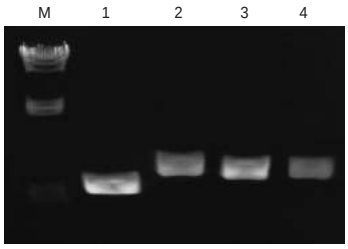


Total RNA was purified from *E. coli* (OD_{600} ≒ 1.8) using several RNA extraction kits of different companies. *E. coli* cells were taken to the total RNA purification.
The purified total RNA was loaded on a 1% formaldehyde gel.
Lane M : 0.5 ~ 10 kb RNA ladder
Lane 1 : Total RNA from Hybrid-R™
Lane 2 : Total RNA from supplier A
Lane 3 : Total RNA from supplier B



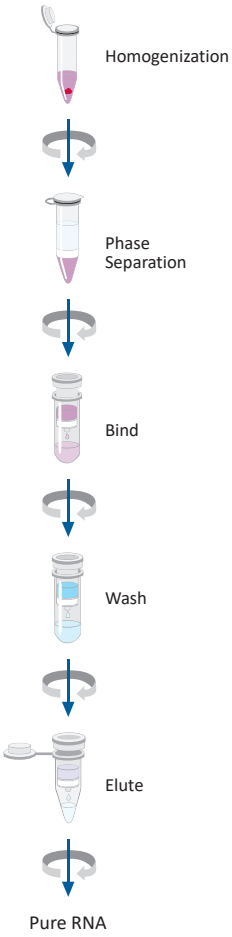
Total RNA was purified from rat liver using several RNA extraction kits of different companies.
The purified total RNA was loaded on a 1% formaldehyde gel.
Lane M : 0.5 ~ 10 kb RNA ladder
Lane 1 : Total RNA from Hybrid-R™
Lane 2 : Total RNA from supplier A
Lane 3 : Total RNA from supplier B
Lane 4 : Total RNA from supplier C

RNA Purification Results II



Total RNA was purified from various samples using Hybrid-R™.
And then, the cDNA was synthesized by reverse transcriptase.
The cDNA was amplified by PCR and confirmed by electrophoresis.
Lane M : Lambda-HindIII
Lane 1 : PCR of *E. coli* cDNA
Lane 2 : PCR of Rat kidney cDNA
Lane 3 : PCR of Rat liver cDNA
Lane 4 : PCR of Rat heart cDNA

Procedures



Component list

RiboEx™
Column Type F (with collection tube)
1.5 ml microcentrifuge tube
Buffer RB1
Buffer SW1
Buffer RNW
Nuclease-free water
Protocol Handbook

Hybrid-R™ Blood RNA

For the isolation of total RNA from whole blood

Description

Hybrid-R™ Blood RNA is a complete kit with ready-to-use reagent for the isolation of total RNA from up to 0.25 ml whole blood sample. This kit utilizes the lysis method of RiboEx™ LS which has a powerful ability of cell-lysis and the purification method based on glassfiber membrane technology. Fast and convenient procedure of Hybrid-R™ Blood RNA takes only 30 minutes for complete preparation of pure RNA. Whole blood sample is homogenized and lysed in RiboEx™ LS, a mono phasic solution containing phenol and guanidium salt, which rapidly lyse cells and inactivates nucleases. In conventional methods, the erythrocytes of mammalian blood which does not contain nuclei (and therefore, RNA either) should be removed by pre-treatment such as osmotic lysis for the separation of leukocytes from whole blood. This additional treatments increase the experiment time and the possibility of RNA-breakage, followed by decline of RNA-quality.

Hybrid-R™ Blood RNA does not need the additional treatment of blood sample, and whole blood is lysed in RiboEx™ LS in just one step. Then addition of chloroform brings about a separation of the lysate into aqueous and organic phases. After phase-separating, DNA and protein remain in the interphase and the organic phase respectively but released RNA exists in the aqueous phase. The aqueous phase is picked and applied to a EzPure™ Filter to eliminate small amount of contaminated DNA and other blood contaminants. The passed-through is mixed with Buffer RB1, RNA binding buffer, and then the mixture is applied to a Column Type W. After a series of washing with Buffer RBW and RNW, pure RNA can be eluted by Nuclease-free water.

Hybrid-R™ Blood RNA is suitable for RNA preparation from 0.1 ml to 0.25 ml mammalian whole blood. The typical yield is 3 μg per 0.25 ml whole blood. The purified RNA can be applicable for the isolation of Poly A^+ RNA, northern blotting, dot blotting, *in vitro* translation, cloning, RT-PCR, RPA and other analytical procedures.

Features and Benefits

- Preparation time : ~ 30 minutes
- Accurate and consistent yield from whole blood
- High purity and yield
- Sample size : 100 ~ 250 μℓ / prep
- No ethanol precipitation
- No genomic DNA contamination

Hybrid-R™ Blood RNA

Format : Column Type W
(with 2.0 ml collection tube)

Sample size : ~ 250 μℓ whole blood

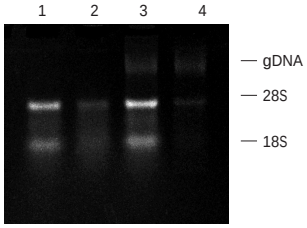
Application volume : ~ 700 μℓ

Min. elution volume : 30 μℓ

Binding capacity : 100 μg

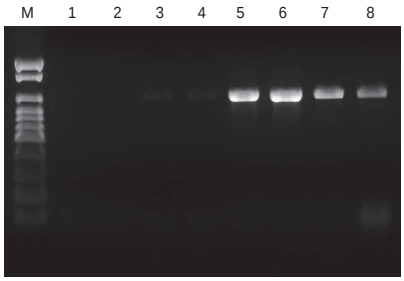
Cat. No.	Products	Type	Size
315-150	Hybrid-R™ Blood RNA	Spin	50

Comparison Data

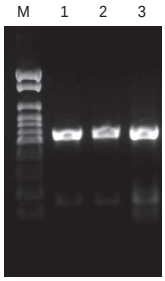


Total RNA was extracted from whole blood using several RNA extraction kits of different companies. The extracted total RNA was loaded on a 1% formaldehyde gel.
Lane 1 : Total RNA from Hybrid-R™ Blood RNA for 250 μℓ of whole blood
Lane 2 : Total RNA from supplier A for 500 μℓ of whole blood
Lane 3 : Total RNA from supplier B for 500 μℓ of whole blood
Lane 4 : Total RNA from supplier C for 250 μℓ of whole blood

Verification of Genomic DNA Contamination and RT-PCR Result

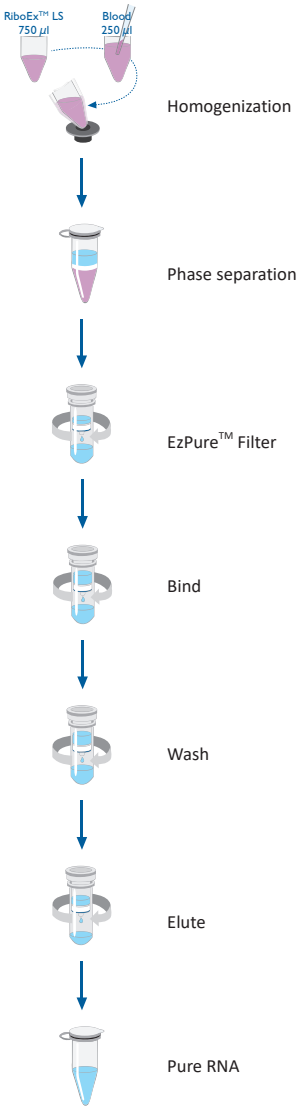


As analysis of genomic DNA contamination, PCR for amplication of human beta-actin was performed with eluates purified from whole blood using several kits of other companies.
Lane M : 1 Kb ladder
Lane 1, 2 : PCR of the eluate from Hybrid-R™ Blood RNA
Lane 3, 4 : PCR of the eluate from supplier A
Lane 5, 6 : PCR of the eluate from supplier B
Lane 7, 8 : PCR of the eluate from supplier C



Total RNA was extracted from whole blood using Hybrid-R™ Blood RNA and other supplier kits. And then the cDNA was synthesized by reverse transcriptase. The cDNA was amplified by human beta-actin primer and confirmed by electrophoresis.
Lane M : 1 Kb ladder
Lane 1 : PCR of cDNA from Hybrid-R™ Blood RNA
Lane 2 : PCR of cDNA from supplier A
Lane 3 : PCR of cDNA from supplier B

Procedures



Component list
Column Type W (with collection tube)
EzPure™ Filter (with collection tube)
1.5 ml microcentrifuge tube
RiboEx™ LS
Buffer RB1
Buffer RBW
Buffer RNW
Nuclease-free water
Protocol Handbook

Hybrid-R™ miRNA

For purification of large and small RNA separately from cultured cells or animal tissues

Description

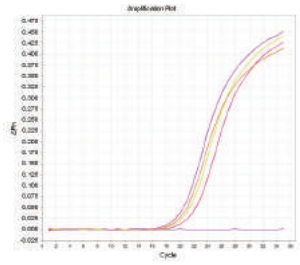
In recent years, interest in small RNA, such as siRNA and miRNA which are related to research of gene regulation, has expanded. There are many commercial kits for total RNA preparation, but most of these are focused on preparation of large RNA longer than 200 nucleotides. Because both siRNA and miRNA are between 15 ~ 30 nucleotides in length, the need of specially optimized kit for small RNA (< 200 nucleotides) is growing rapidly. Hybrid-R™ miRNA is designed for purification of large and small RNA separately from culture cells or animal tissues and co-purification in a single tube is also available by modified protocol. This kit utilizes the lysis method of RiboEx™ which has a powerful ability of lysis and the purification method based on glassfiber membrane technology. Samples are homogenized in RiboEx™, a monophasic solution containing phenol and guanidium salt, which rapidly lyse cells and inactivates nucleases. Addition of chloroform brings about a separation of the lysate into aqueous and organic phases. Total RNA locates in the aqueous phase while DNA and protein remain in the interphase and organic phase. Large and small RNA in the aqueous phase are selectively bound to Column Type B and Type W respectively. The Column Type B selectively adsorbs the RNA larger than 200 nucleotides in length, while the Column Type W specifically holds the RNA smaller than 200 nucleotides in length. To purify large RNA, the aqueous phase is mixed with ethanol and the mixture is applied to a Column Type B. After centrifugation, large RNA is bound to membrane and the mixture containing small RNA goes into collection tube through the membrane. The membrane is washed away by two wash buffer (SW1 and RNW) and purified large RNA is eluted from the membrane by Nuclease-free water. To purify small RNA, the pass-through come from the binding of large RNA is mixed with ethanol and then applied to a Column Type W. After washing with Buffer RBW and RNW, small RNA is eluted by Nuclease-free water. The procedure of Hybrid-R™ miRNA takes only 30 minutes for complete preparations of pure RNA. The purified RNA is suitable for the isolation of Poly A^+ RNA, northern blotting, dot blotting, *in vitro* translation, cloning, RT-PCR, RPA and other analytical procedures.

Features and Benefits

- Preparation time : ~ 30 minutes
- Stable and consistent yield
- High purity and yield
- Perfect separation of small RNA fragment
- Sample size : ~ 50 mg tissue / ~ 1 x 10^7 cultured cells
- Recovery range : Large RNA : > 200 nucleotides
  Small RNA : < 200 nucleotides
- No ethanol precipitation
- No genomic DNA contamination
- Ready for use in northern blotting, dot blotting, *in vitro* translation, cloning, RT-PCR, RPA and other analytical procedures

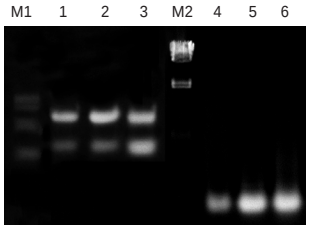
Cat. No.	Products	Type	Size
325-150	Hybrid-R™ miRNA	Spin	50

Real-Time PCR Result of miR-24 from Small RNA



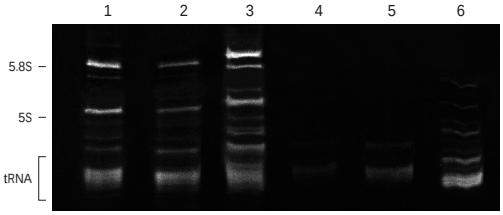
Real-time PCR was performed with purified small (micro) RNA using Hybrid-R™ miRNA kit. Small RNA was extracted from CHO cell, RAW264.7 cell and rat heart and liver. And then RT-PCR of miR-24 was performed using miScript PCR system (Qiagen). Amplified miR-24 was detected by 7500 Real-Time PCR system (Applied Biosystems).

Experimental Results I



Large and small RNA were extracted from CHO (chinese hamster ovary) cell, RAW264.7 cell and rat lung tissue using Hybrid-R™ miRNA.
The purified large RNA was loaded on a 1% formaldehyde gel and small RNA was loaded on a 1% agarose gel.

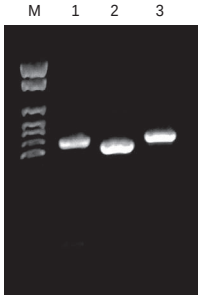
Lane M1 : 0.5 ~ 10 kb RNA ladder
Lane 1 : Large RNA from CHO cell
Lane 2 : Large RNA from RAW264.7 cell
Lane 3 : Large RNA from rat lung
Lane M2 : Lambda-HindIII
Lane 4 : Small RNA from CHO cell
Lane 5 : Small RNA from RAW264.7 cell
Lane 6 : Small RNA from rat lung



miRNA was extracted using several miRNA extraction kits of different companies. The extracted miRNA was loaded on a 15% urea-acrylamide gel.

Lane 1 : miRNA from Hybrid-R™ miRNA for CHO cell
Lane 2 : miRNA from Hybrid-R™ miRNA for RAW264.7 cell
Lane 3 : miRNA from Hybrid-R™ miRNA for rat lung
Lane 4 : miRNA from supplier A for CHO cell
Lane 5 : miRNA from supplier A for RAW264.7
Lane 6 : miRNA from supplier A for rat lung

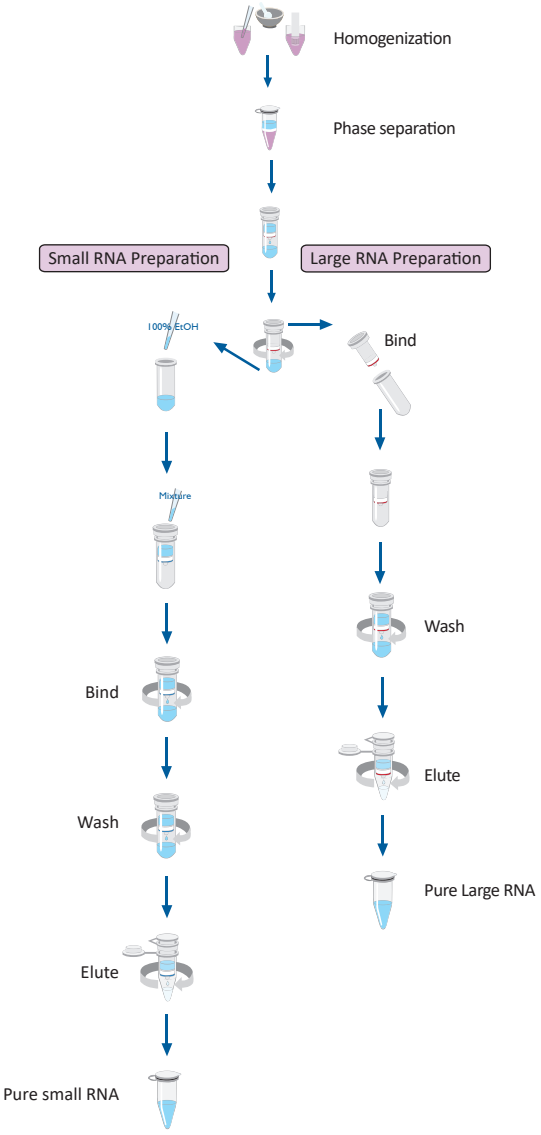
Experimental Results II



Large RNA was purified from CHO cell, RAW264.7 cell and rat lung tissue using Hybrid-R™ miRNA.
And then cDNA was sythesized by reverse transcriptase. The cDNA was amplified by beta-actin primer and confirmed by eletrophoresis.

Lane M : 1kb ladder
Lane 1 : PCR of cDNA from CHO cell
Lane 2 : PCR of cDNA from RAW264.7
Lane 3 : PCR of cDNA from rat lung

Procedures



Component list

Column Type B (red ring),
(with collection tube)
Column Type W (blue ring),
(with collection tube)
2.0 ml collection tube
1.5 ml microcentrifuge tube
RiboEx™
Buffer SW1
Buffer RBW
Buffer RNW
Nuclease-free water
Protocol Handbook

RiboEx™

For total RNA isolation from various samples

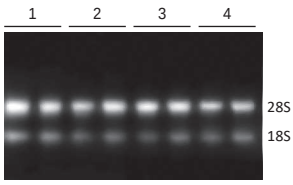
Description

RiboEx™ is a complete kit with ready-to-use reagents for the isolation of total RNA from samples of human, animal, plant, yeast, bacterial and viral origin. RiboEx™ is based on the disruption of cells in guanidine salt / detergent solution, followed by organic extraction and alcohol precipitation of the RNA, and it allows simultaneous processing of a large number of samples. RiboEx™ can yield up to 10 μg / 1 mg tissue or up to 22 μg / 1 x 10^7 cultured cells of highly purified total RNA. The resulting total RNA is suitable for the isolation of poly A^+ RNA, northern blotting, dot blotting, *in vitro* translation, cloning, RT-PCR, RNase protection assays and other analytical procedures.

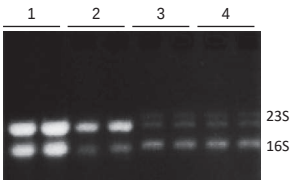
Features and Benefits

- Format : Monophase solution type
- Sample size : ~ 100 mg tissue
  ~ 1 x 10^7 cells
- Preparation time : 50 ~ 65 minutes
- Typical yield : ~ 10 μg / 1 mg tissue
  ~ 22 μg / 1 x 10^7 cultured cells
- High purity : $OD_{260/230}$ > 2.0, $OD_{260/280}$ > 1.8
- Accurate and consistent yield from animal tissue, cultured cell line, plant, *E. coli* and various biological samples
- Accurate and easy phase separation
- Ready for use in RT-PCR, northern blotting, dot blotting, *in vitro* translation, molecular cloning, real-time PCR, RNase protection assays and other analytical procedures

RNA Purification Results



Total RNA was purified from rat brain using several RNA extraction kits of different companies. The purified total RNA was loaded on a 1% formaldehyde gel.
Lane 1 : Total RNA from RiboEx™
Lane 2 : Total RNA from Supplier A
Lane 3 : Total RNA from Supplier B
Lane 4 : Total RNA from Supplier C



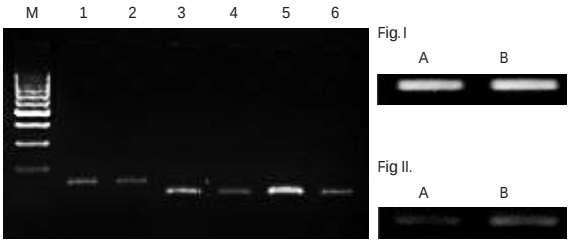
Total RNA was purified from *E. coli* DH5α using several RNA extraction kits of different companies.
E. coli cells were taken to the total RNA purification. The purified total RNA was loaded on a 1% formaldehyde gel.
Lane 1 : Total RNA from RiboEx™
Lane 2 : Total RNA from Supplier A
Lane 3 : Total RNA from Supplier B
Lane 4 : Total RNA from Supplier C

Cat. No.	Products	Type	Size
301-001	RiboEx™	Solution	100
301-002	RiboEx™	Solution	200

Total RNA Yield from Various Starting Materials Using RiboEx™

Materials	Sample type	Amount	Yields of RNA
Cell Lines	CHO	1.5 x 10^6 cells	~ 20 μg
Animal Tissue	Liver	1 mg	~ 10 μg
	Spleen	1 mg	~ 10 μg
	Kidney	1 mg	~ 4 μg
	Brain	1 mg	~ 1.5 μg
Gram(-) Bacteria	*E. coli*	$O.D_{600}$ ≒ 1.8 (1.5 ml pellet)	~ 60 μg

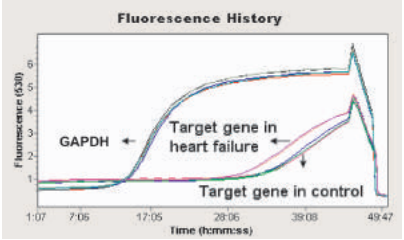
RT-PCR Results



Total RNA was purified from Mouse ES cell using RiboEx™ and supplier A kits. And then, the cDNA was synthesized by reverse transcriptase. The cDNA was amplified by PCR and confirmed by electrophoresis.
Lane M : 1 Kb ladder
Lane 1, 3, 5 : PCR of cDNA from RiboEx™
Lane 2, 4, 6 : PCR of cDNA from supplier A
Lane 1, 2 : amplified by β-actin primer
Lane 3, 4, 5, 6 : amplified by Oct 4 primer

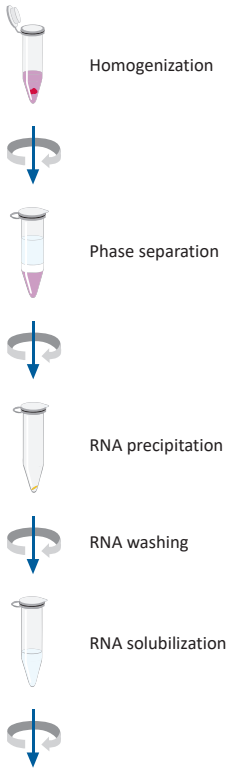
Fig I, II Total RNA was purified from 293 cell using RiboEx™ and supplier A kits. And then the cDNA was synthesized by reverse transcriptase. The cDNA was amplified by PCR and confirmed by electrophoresis.
Lane A : supplier A kit
Lane B : RiboEx™
Fig I : amplified by GAPDH primer
Fig II : amplified by Hif-1 primer

Real-Time PCR Amplication



Real-time PCR was performed with purified total RNA using RiboEx™ total RNA isolation kit. Total RNA was extracted from rat atrium. And then the cDNA was synthesized by reverse transcriptase. Reference was confirmed by GAPDH primer and target gene was confirmed by ET-1 primer in the experimental and control group.

Procedures



Component list

RiboEx™
Protocol Handbook

RiboEx™ LS

For total RNA isolation from various liquid samples

Description

RiboEx™ LS is a complete kit with ready-to-use reagents for the isolation of total RNA from various liquid samples. RiboEx™ LS is a concentrated form of RiboEx™ and this allows that liquid samples can be processed more easily with it, while RiboEx™ is more suitable for solid samples and pelleted cells. RiboEx™ LS is a mono-phasic solution containing phenol and guanidine salt, which rapidly lyse cells and inactivates nucleases. Addition of chloroform brings about a separation of the homogenate in aqueous and organic phases. RNA locates in the aqueous phase while DNA and protein remain in the interphase and organic phases. The aqueous phase including RNA is mixed with isopropanol and the RNA which is precipitated by centrifuging. The purified total RNA is suitable for RT-PCR, northern blotting, dot blotting, *in vitro* translation, molecular cloning, real-time PCR, RNase protection assays and other analytical procedures.

Features and Benefits

- Format : Monophase solution type
- Sample size : ~ 0.25 ml liquid sample
  ~ 100 mg tissue
- Preparation time : 50 ~ 65 minutes
- Typical yield : ~ 30 μg / 1 x 10^6 cultured cells
  ~ 10 μg / 1 mg tissue
- High purity : A_{260} / A_{230} > 2.0, A_{260} / A_{280} > 1.8
- Accurate and consistent yield
- Ready for use in RT-PCR, northern blotting, dot blotting, *in vitro* translation, molecular cloning, real-time PCR, RNase protection assays and other analytical procedures

Genomic DNA Contamination Test and RT-PCR Result

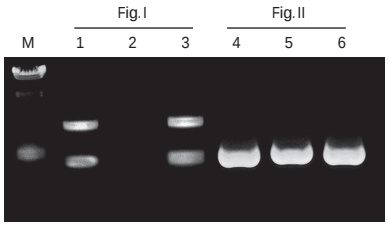


Fig. I Genomic DNA contamination was tested by PCR. Eluate, including total RNA of RAW264.7 cell, from several RNA extraction kits of different companies was the template of PCR and amplified by beta-actin primer.
Lane M : Lambda-HindIII
Lane 1 : PCR of the eluate from supplier A
Lane 2 : PCR of the eluate from RiboEx™ LS
Lane 3 : PCR of the eluate from supplier B

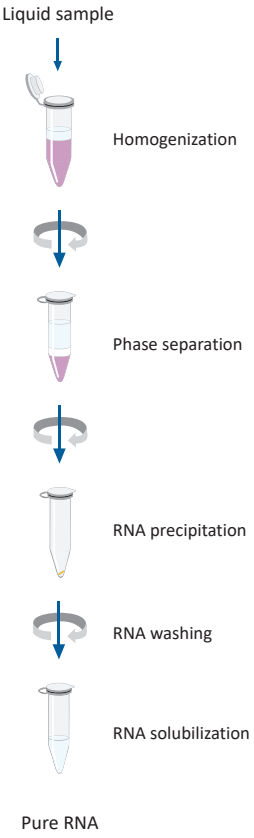
Fig. II Total RNA was extracted from RAW264.7 cell using RiboEx™ LS and supplier kits. And then, the cDNA was synthesized by reverse transcriptase. The cDNA was amplified by PCR and confirmed by electrophoresis.
Lane 4 : PCR of cDNA from supplier A
Lane 5 : PCR of cDNA from RiboEx™ LS
Lane 6 : PCR of cDNA from supplier B

Cat. No.	Products	Type	Size
302-001	RiboEx™ LS	Solution	100
302-002	RiboEx™ LS	Solution	200

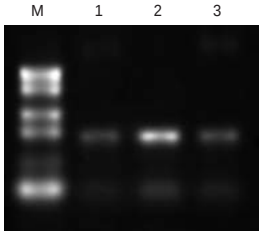
Total RNA Yield from Various Starting Materials Using RiboEx™ LS

Materials	Sample type	Amount	Yields of RNA
Cell Lines	RAW 264.7	1 x 10^6 cells	~ 28 μg
Animal Tissue	Liver	1 mg	~ 10 μg
	Spleen	1 mg	~ 10 μg
	Kidney	1 mg	~ 4 μg
	Brain	1 mg	~ 1.5 μg
Blood	Whole human or animal blood	0.25 ml	~ 1.5 μg
Gram(-) Bacteria	*E. coli*	$O.D_{600}$ ≒ 1.8 (1.5 ml pellet)	~ 60 μg

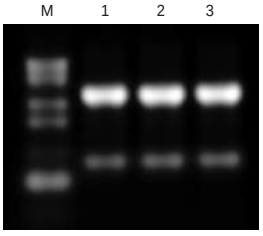
Procedures



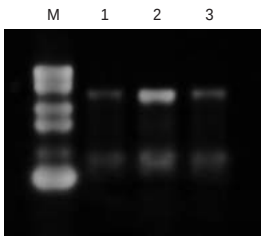
Comparison Data



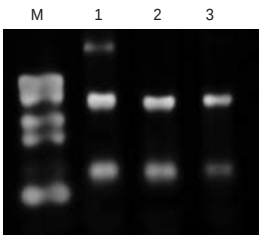
Total RNA was extracted from *E. coli* DH5α using several RNA extraction kits of different companies. The extracted total RNA was loaded on a 1% formaldehyde gel.
Lane 1 : Total RNA from supplier A
Lane 2 : Total RNA from RiboEx™ LS
Lane 3 : Total RNA from supplier B



Total RNA was extracted from CHO (chinese hamster ovary) cell using several RNA extraction kits of different companies. The extracted total RNA was loaded on a 1% formaldehyde gel.
Lane 1 : Total RNA from supplier A
Lane 2 : Total RNA from RiboEx™ LS
Lane 3 : Total RNA from supplier B



Total RNA was extracted from heart tissue of rat using several RNA extraction kits of different companies. The extracted total RNA was loaded on a 1% formaldehyde gel.
Lane 1 : Total RNA from supplier A
Lane 2 : Total RNA from RiboEx™ LS
Lane 3 : Total RNA from supplier B



Total RNA was extracted from whole blood of rat using several RNA extraction kits of different companies. The extracted total RNA was loaded on a 1% formaldehyde gel.
Lane 1 : Total RNA from supplier A
Lane 2 : Total RNA from RiboEx™ LS
Lane 3 : Total RNA from supplier B

Component list

RiboEx™ LS
Protocol Handbook

Ribospin™

For total RNA isolation from animal tissues and cultured cells

Description

Ribospin™ provides a convenient method for isolation of total RNA from cell and tissue samples. Ribospin™ procedures employed the glassfiber membrane technology for the fastest and the most convenient of high purity RNA isolation, instead of conventional alcohol precipitation or phenol / chloroform extraction. Whole procedure takes only 15 minutes and the eluates are suitable for RT-PCR or any downstream application without further manipulation.

Features and Benefits

- Glassfiber membrane technology
- Sample size : ~ 25 mg tissue / ~ 5 x 10^6 cultured cells
- Typical yield : ~ 20 μg / 1 x 10^6 cultured cells
  ~ 60 μg / 10 mg liver tissue
- High purity : A_{260} / A_{230} > 2.0, A_{260} / A_{280} > 1.8
- Preparation time : ~ 15 minutes
- Stable and consistent yield
- No phenol / chloroform extraction
- No ethanol precipitation
- Ready for use in RT-PCR, northern blotting, dot blotting, *in vitro* translation, molecular cloning, real-time PCR, RNase protection assays and other analytical procedures

Ribospin™

Format : Column Type F
(with 2.0 ml collection tube)

Sample size : ~ 25 mg tissue / ~ 5 x 10^6 cells

Application volume : ~ 700 μℓ

Min. elution volume : ~ 40 μℓ

Binding capacity : ~ 500 μg

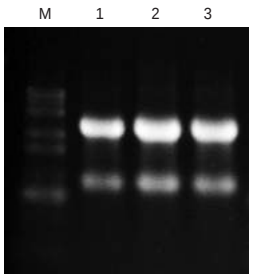
Cat. No.	Products	Type	Size
304-150	Ribospin™	Spin	50

Total RNA Yield from Various Starting Materials Using Ribospin™.

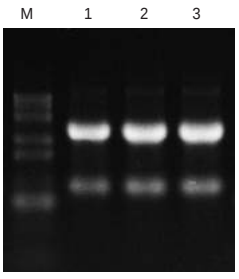
Materials	Sample type	Amount	Yields of RNA
Cultured cell	CHO	1 x 10^6 cells	~ 15 μg
	RAW 264.7	1 x 10^6 cells	~ 20 μg
Tissue	Liver	10 mg	~ 60 μg
	Kidney	10 mg	~ 30 μg
	Spleen	10 mg	~ 35 μg
E. coli	DH5α	$O.D_{600}$ ≒ 1.5 (2 ml pellet)	~ 10 μg

* The yield of total RNA may vary depending on the tissue or cells from which it is obtained.

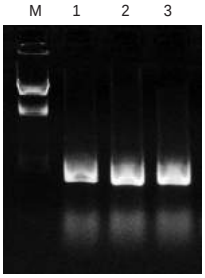
Downstream Application Tests



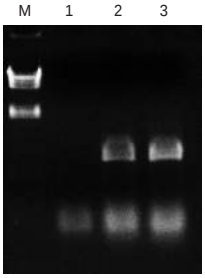
Total RNA was extracted from RAW264.7 cell using several RNA extraction kits of different companies. The extracted RNA was loaded on a 1% formaldehyde gel.
Lane M : 0.5 ~ 10 kb RNA ladder
Lane 1 : Total RNA from supplier A
Lane 2 : Total RNA from supplier B
Lane 3 : Total RNA from Ribospin™



Total RNA was extracted from CHO (chinese hamster ovary) cell using several RNA extraction kits of different companies. The extracted RNA was loaded on a 1% formaldehyde gel.
Lane M : 0.5 ~ 10 kb RNA ladder
Lane 1 : Total RNA from supplier A
Lane 2 : Total RNA from supplier B
Lane 3 : Total RNA from Ribospin™

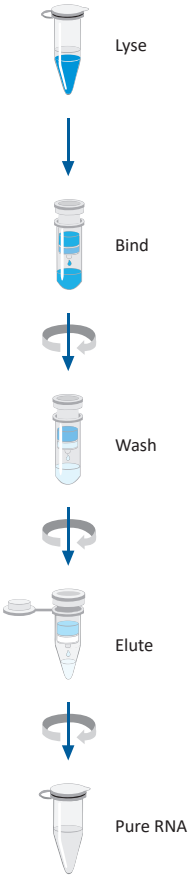


Total RNA was extracted from RAW264.7 cell using Ribospin™ and supplier kits. And then the cDNA was synthesized by reverse transcriptase. The cDNA was amplified by PCR and confirmed by electrophoresis.
Lane M : Lambda-HindIII
Lane 1 : PCR of cDNA from supplier A
Lane 2 : PCR of cDNA from supplier B
Lane 3 : PCR of cDNA from Ribospin™



Total RNA was extracted from liver tissue of rat using Ribospin™ and supplier kits. And then the cDNA was synthesized by reverse transcriptase. The cDNA was amplified by PCR and confirmed by electrophoresis.
Lane M : Lambda-HindIII
Lane 1 : PCR of cDNA from supplier A
Lane 2 : PCR of cDNA from supplier B
Lane 3 : PCR of cDNA from Ribospin™

Procedures



Component list

Column Type F (with collection tube)
1.5 ml microcentrifuge tube
Buffer LYS
Buffer GW1
Buffer RNW
Nuclease-free water
Protocol Handbook

Ribospin™ II

For total RNA isolation from animal tissues and cultured cells

Description

Ribospin™ II is devised to purify RNA from cultured cells or animal tissues (~ 1 x 10^7 cells or ~ 30 mg tissue). With the GeneAll's glassfiber membrane technology, highly pure RNA can be conveniently isolated in less than 30 minutes instead of the time consuming and hazardous conventional methods which require alcohol precipitation or toxic chemicals such as phenol / chloroform. The optimized buffer system of Ribospin™ II maximizes the specific binding efficiency of RNA to the glassfiber membrane but minimizes the contamination of impurities by a series of optimized wash buffer. Also, the contaminated DNA residues can be easily eliminated during the preparation by on-column digestion using DNase I included in this kit. Pure RNA which finally prepared in Nuclease-free water can be applied to the most of downstream application which require the pure RNA, and this whole procedure can be completely performed at room temperature.

Features and Benefits

- Simple, safer process with non-organic reagents
- Upgraded lysis buffer system, excellent lysis power and minimized bubble formation
- Preparation time : ~ 30 minutes
- DNase I included for pure RNA
- Accurate and consistent yield

Ribospin™ II

Format : Column Type F
(with 2.0 ml collection tube)

Sample size : ~ 30 mg tissue or ~ 1 x 10^7 cells

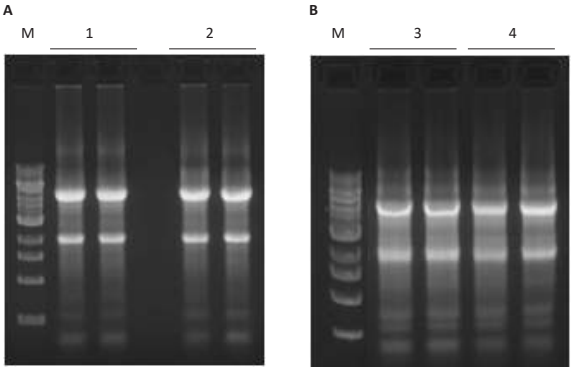
Max. loading volume : ~ 750 μℓ

Max. elution volume : ~ 30 μℓ

Max. binding capacity : ~ 500 μg

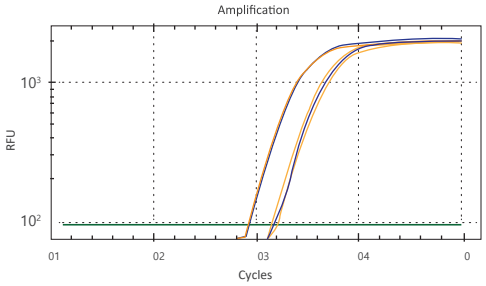
Cat. No.	Products	Type	Size
314-150	Ribospin™ II	Spin	50
314-103	Ribospin™ II	Spin	300

RNA Purification Experiments

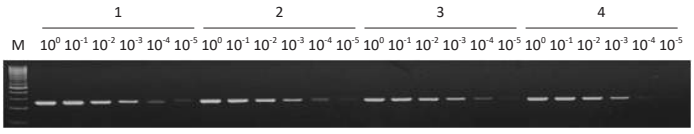


Total RNA was extracted from CHO (chinese hamster ovary-Panel A) cell and rat liver (10 mg / prep-Panel B) cell using Ribospin™ II and supplier A kit.
The extracted RNA was loaded on a 1% agarose gel.

Lane 1, 3 : Total RNA from Ribospin™ II
Lane 2, 4 : Total RNA from Supplier A



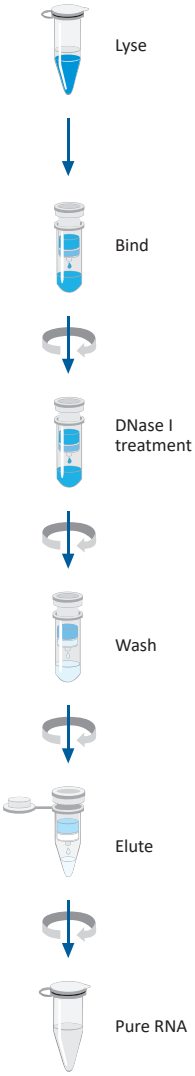
Total RNA was extracted from rat liver and brain with Ribospin™ II (Blue) and supplier A kit (Yellow). RT-qPCR was carried out with rat GAPDH primer sets using BIO-RAD CFX96 Touch™ Real-Time PCR Detection System.
cDNA synthesis is performed with HyperScript™ first strand synthesis kit and qPCR is performed with RealAmp™ qPCR Master mix kit.



Total RNA was extracted from heart tissue (rat) using Ribospin™ II and supplier A kit. And then the cDNA was synthesized by reverse transcriptase.
The cDNA was amplified by PCR and confirmed by electrophoresis.

Lane 1, 2 : PCR of cDNA from Ribospin™ II
Lane 3, 4 : PCR of cDNA from supplier A

Procedures



Component list

Column Type F (with collection tube)
1.5 ml microcentrifuge tube
Buffer RAL
Buffer RW
Buffer RSW
Buffer DRB
Nuclease-free water
DNase I
Protocol Handbook

Ribospin™ vRD (Plus)

For viral RNA / DNA isolation from various samples

Description

Ribospin™ vRD provides a convenient method for isolation of RNA and DNA from cell-free fluid, cell-culture supernatant, plasma, serum, swab, urine, and virus-infected samples. Ribospin™ vRD procedures employed the glassfiber membrane technology for the fastest and the most convenient of high purity RNA and DNA isolation, instead of conventional alcohol precipitation or phenol / chloroform extraction. Ribospin™ vRD buffer system provides the effective binding condition of RNA and DNA to glassfiber membrane through mix with lysis and binding buffers. And then the impurities on the membrane are washed away by two different wash buffers. At last, pure RNA and DNA are eluted by nuclease-free water. Whole procedure may take only 20 minutes and the eluate is suitable for PCR, RT-PCR or any downstream application without further manipulation.
Ribospin™ vRD Plus kit offers carrier RNA for purification of nucleic acid from very small amounts of sample.

Features and Benefits

- Glassfiber membrane technology
- Sample size : ~ 300 μℓ
- Preparation time : ~ 20 minutes
- Stable and consistent yield
- No phenol / chloroform extraction
- No ethanol precipitation
- Ready for use in PCR, RT-PCR, real-time PCR and other analytical procedures

Ribospin™ vRD (Plus)

Format : Column Type V
(with 2.0 ml collection tube)

Sample size : ~ 300 μℓ

Application volume : ~ 800 μℓ

Min. elution volume : ~ 30 μℓ

Binding capacity : ~ 100 μg

Cat. No.	Products	Type	Size
302-150	Ribospin™ vRD	Spin	50
312-150	Ribospin™ vRD Plus	Spin	50

Experimental Results

* Amplification test of HPIV (human parainfluenza virus) RNA

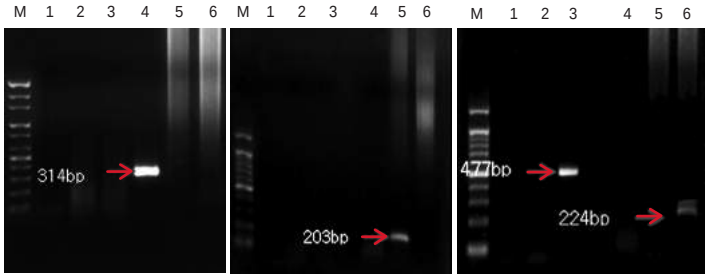


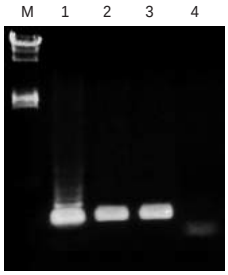
Fig I : PCR result using HPIV 1 specific primer

Fig II : PCR result using HPIV 2 specific primer

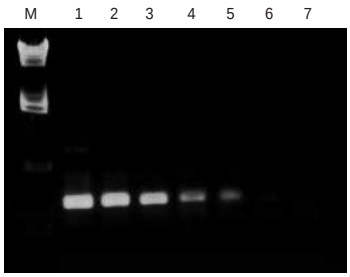
Fig III : PCR result using HPIV specific primer

Viral RNA was purified from HPIV (human parainfluenza virus) 1, 2, 3 infected samples using Ribospin™ vRD. And the cDNA was synthesized by reverse transcriptase. The cDNA was amplified by PCR and confirmed by electrophoresis.
Lane M : 100 bp ladder
Lane 1 ~ 3 : First PCR result
Lane 4 ~ 6 : Nest PCR result
Lane 1, 4 : HPIV 1
Lane 2, 5 : HPIV 2
Lane 3, 6 : HPIV 3

* Amplification test of HSV-1 (Herpes simplex virus) DNA

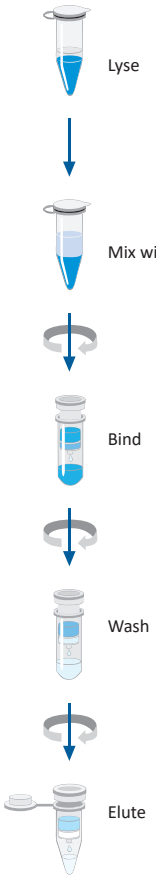


Total nucleic acid was extracted from cells infected by HSV-1 (DNA virus) and HSV-1 samples using Ribospin™ vRD. The DNA of HSV-1 was amplified by PCR and confirmed by electrophoresis.
Lane M : Lambda-HindIII
Lane 1 : PCR of DNA from infected cell
Lane 2, 3 : PCR of DNA from HSV-1 sample
Lane 4 : Negative control



Total DNA was extracted from gradually diluted HSV-1 sample using Ribospin™ vRD. And then the DNA of HSV-1 was amplified by PCR and confirmed by electrophoresis.
Lane M : Lambda-HindIII
Lane 1 : PCR of DNA extracted from 6 x 10^4 pfu HSV-1
Lane 2 : PCR of DNA extracted from 6 x 10^3 pfu HSV-1
Lane 3 : PCR of DNA extracted from 6 x 10^2 pfu HSV-1
Lane 4 : PCR of DNA extracted from 6 x 10 pfu HSV-1
Lane 5 : PCR of DNA extracted from 6 pfu HSV-1
Lane 6 : Negative control of a purification procedure
Lane 7 : Negative control

Procedures



Viral RNA / DNA

Component list
Column Type V (with collection tube)
1.5 ml microcentrifuge tube
Buffer VL
Buffer RB1
Buffer RBW
Buffer RNW
Carrier RNA (Plus only)
Nuclease-free water
Protocol Handbook

Ribospin™ vRD II

For viral RNA / DNA isolation from various samples

Description

Ribospin™ vRD II provides a convenient method for isolation of RNA and DNA from cell-free fluid, cell-cultrue supernatant, plasma, serum, swab, urine, and virus-infected samples. Ribospin™ vRD II procedures employed the glassfiber membrane technology for the fastest and the most convenient of high purity RNA and DNA isolation, instead of conventional alcohol precipitation or phenol / chloroform extraction. Ribospin™ vRD II buffer system provides the effective binding condition of RNA and DNA to glassfiber membrane and the impurities on the membrane are washed away by two different wash buffers. At last, pure RNA and DNA are eluted by nuclease-free water. Whole procedure takes only 15 minutes and the purified nucleic acid is suitable for PCR, RT-PCR, or any downstream application without further manipulation.

Features and Benefits

- Spin column format
- Stable and consistent yield
- Preparation time : ~ 15 minutes
- No phenol / chloroform extraction
- No ethanol precipitation
- Micro column & carrier RNA enhance the performance of viral sample extraction
- Various viral samples : cell-free fluid, cell-culture supernatant, plasma, serum, swab, urine and virus-infected samples
- Ready for use in PCR, RT-PCR, real-time PCR and other analytical procedures

Ribospin™ vRD II

Format : Column Type S (Micro),
(with 2.0 ml collection tube)

Sample size : ~ 100 μℓ

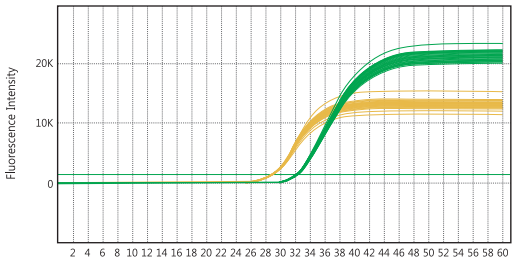
Preparation time : ~ 15 min

Max. loading volume : ~ 750 μℓ

Elution volume : 20 ~ 50 μℓ

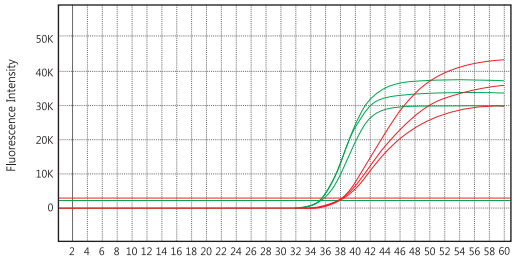
Cat. No.	Products	Type	Size
322-150	Ribospin™ vRD II	Spin	50
322-103	Ribospin™ vRD II	Spin	300

Stable and Reproducible Results



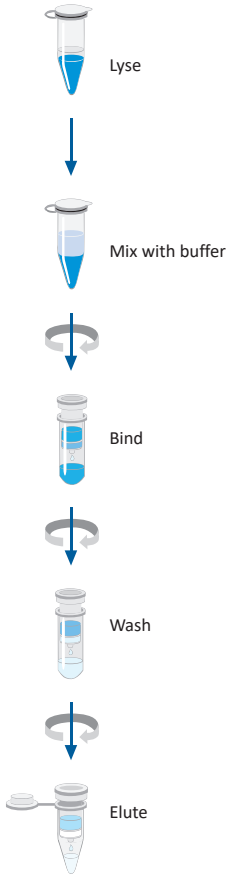
Consistency test of Ribospin™ vRD II.
HIV positive was diluted to 1000 IU / ml with human serum.
Extraction tests of HIV samples of 24 repeats were performed with Ribospin™ vRD II kit and the consistent result was confirmed by real-time PCR. Green is HIV signal and yellow is IC (internal control) signal.

Real-Time PCR Amplification



Results from different clinical human serum.
The extracted HIV (50 IU / ml, Red) and HBV (50 IU / ml, green) nucleic acids using Ribospin™ vRD II kit were amplified and detected by real-time PCR. Three repeat tests were performed for each sample.

Procedures



Viral RNA / DNA

Component list
Column Type S (with collection tube)
1.5 ml microcentrifuge tube
Buffer NVL
Buffer RB1
Buffer RBW
Buffer RNW
Carrier RNA
Nuclease-free water
Protocol Handbook

Ribospin™ Plant

For total RNA isolation from various plant samples

Description

Ribospin™ Plant is specially designed for purification of total RNA from various plant tissues such as leaves, stems, roots and picky plant samples. This kit provides the optimized buffer and spin column, which is effective in removing polysaccharides and polyphenolic compounds and isolating intact plant RNA. All components of Ribospin™ Plant are ready to use, so any further preparation for experiment is not required. The procedure of Ribospin™ Plant begins with the disruption of sample in liquid nitrogen using mortar and pestle. The disrupted sample can be lysed in Buffer RPL or REL. In most case, Buffer RPL is the best buffer for lysis. However in some plant samples, solidification of lysate can be occurred with Buffer RPL due to endosperm of seed or peculiar metabolites and this can be avoided by using Buffer REL as alternative for Buffer RPL. Most impurities except RNA in the lysate are eliminated by filtration through EzPure™ Filter and then the passed-through lysate is mixed with ethanol to adjust binding condition. Total RNA including a little impurity is bound to the membrane of Column Type W while the mixture is passing through. Survived genomic DNA can be exterminated by on-column DNase I treatment at this step. After a series of washing step using Buffer RBW and RNW, plant total RNA is eluted by Nuclease-free water. Whole procedure of Ribospin™ Plant takes only 25 minutes. The purified RNA is suitable for cDNA synthesis, RT-PCR, northern blotting and other analytical procedure.

Features and Benefits

- Glassfiber membrane technology
- Including DNase I and treatment step
- High purity : A_{260} / A_{280} = 1.8 ~ 2.2, A_{260} / A_{230} > 2.0
- Preparation time : ~ 25 minutes
- No phenol / chloroform extraction
- No ethanol precipitation
- Ready for use in RT-PCR, northern blotting, dot blotting, *in vitro* translation, molecular cloning, real-time PCR, RNase protection assay and other analytical procedures

Ribospin™ Plant

Format : Column Type W (with 2.0 ml collection tube),
EzPure™ Filter (with 2.0 ml collection tube)

Sample size : ~ 100 mg plant tissue

Max. loading volume of EzPure™ Filter : ~ 600 μℓ

Max. loading volume of spin column : ~ 700 μℓ

Min. elution volume : ~ 30 μℓ

Binding capacity : ~ 100 μg

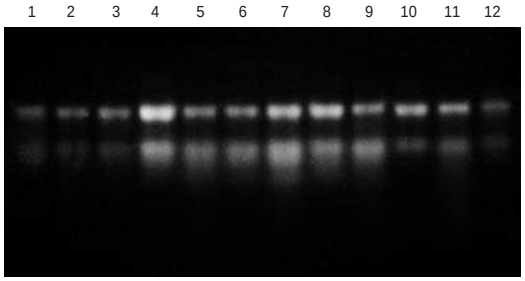
Cat. No.	Products	Type	Size
307-150	Ribospin™ Plant	Spin	50

Total RNA Yield from Various Starting Materials Using Ribospin™ Plant.

Materials	Sample type	Amount	Typical yields
Leaf	*Pinus densiflora* (Pine)	100 mg	2.7 μg
	Cucumis sativus L. (Cucumber)	100 mg	50 μg
	Zea mays (Corn)	100 mg	11 μg
	Capsicum annuum (Red pepper)	100 mg	22 μg
	Lycopersicum esculentum (Tomato)	50 mg	13 μg
	Lactuca sativa (Lettuce)	100 mg	29 μg
	Citrus grandis Osbek (Satsuma)	100 mg	4.6 μg
	Diospyros kaki (Persimmon)	100 mg	16 μg
	Crassula ovata (Crassula)	100 mg	3 μg
	Nicotiana tabacum (Tobacco)	50 mg	13 μg
Root	*Allium cepa* (Onion)	100 mg	8 μg
	Plantago asiatica (Plantain)	50 mg	2.5 μg
	Nicotiana tabacum (Tobacco)	50 mg	5.3 μg
Fruit	*Citrus grandis Osbek* (Satsuma)	50 mg	1.1 μg
Germ bud	*Allium cepa* (Onion)	100 mg	9 μg

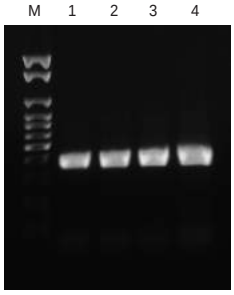
* The yield of total RNA may vary depending on the tissue or cells from which it is obtained.

RNA Purification Results



Total RNA was extracted from a wide variety of plant species using Ribospin™ Plant. The extracted RNA was loaded on a 1% formaldehyde gel.

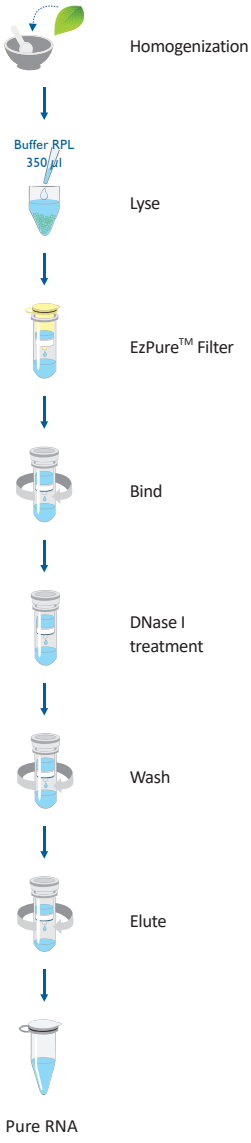
Lane 1 : Leaf RNA from *Pinus densiflora*
Lane 2 : Leaf RNA from *Crassula ovata*
Lane 3 : Leaf RNA from *Citrus grandis Osbek*
Lane 4 : Leaf RNA from *Diospyros kaki*
Lane 5 : Leaf RNA from *Zea mays*
Lane 6 : Leaf RNA from *Lycopersicum esculentum*
Lane 7 : Leaf RNA from *Nicotiana tabacum*
Lane 8 : Leaf RNA from *Lactuca sativa*
Lane 9 : Leaf RNA from *Cucumis satvus L*
Lane 10 : Root RNA from *Plantago asiatica*
Lane 11 : Root RNA from *Nicotiana tabacum*
Lane 12 : Fruit RNA from *Citrus grandis Osbek*



Total RNA was purified from Pinus densiflora by Ribospin™ Plant.
And the cDNA was synthesized by reverse transcriptase.
The cDNA was amplified by PCR and confirmed on a 1% agarose gel.

Lane 1 : cDNA 1 μℓ
Lane 2 : cDNA 2 μℓ
Lane 3 : cDNA 3 μℓ
Lane 4 : cDNA 4 μℓ

Procedures



Component list

Column Type W (blue ring),
(with collection tube)
EzPure™ Filter (yellow),
(with collection tube)
1.5 ml microcentrifuge tube
DNase I
Buffer RPL
Buffer REL
Buffer RBW
Buffer RNW
Buffer DRB
Nuclease-free water
Protocol Handbook

Ribospin™ Seed / Fruit

For total RNA isolation from various seed and fruit samples

Description

Ribospin™ Seed / Fruit kit is designed for easy and convenient isolation of total RNA from difficult plant tissues such as seeds, fruits, and rhizomes. Especially, this kit can remove effectively large quantities of secondary metabolites including polysaccharides and polyphenolic compounds which can lead to inhibition of downstream application. Ribospin™ Seed / Fruit kit provides two different procedures that are available for application of various plant tissues as follows : Protocol I for seed and fruit, Protocol II for starch-enriched grain and rhizome. For efficient RNA purification, this kit offers optimized lysis system according to the sample type and adopts EzPure™ Filter to eliminate impurities simply from lysate. Moreover, contamination of genomic DNA, that causes interference in RNA analysis, can be excluded by on-column DNase I treatment in these procedures. The purified RNA is suitable for use in various downstream procedures including cDNA synthesis, RT-PCR, or northern blotting.

Features and Benefits

- Glassfiber membrane technology
- Simply Removal of the impurities by using EzPure™ Filter
- Including DNase I and treatment step
- High purity : A_{260} / A_{280} = 1.8 ~ 2.2, A_{260} / A_{230} > 2.0
- Preparation time : ~ 30 minutes
- No phenol / chloroform extraction
- No ethanol precipitation
- Ready for use in RT-PCR, northern blotting, dot blotting, *in vitro* translation, molecular cloning, real-time PCR, RNase protection assay and other analytical procedures

Ribospin™ Seed / Fruit

Format : Column Type F (with 2.0 ml collection tube),
EzPure™ Filter (with 2.0 ml collection tube)

Sample size : ~ 100 mg Seed / Fruit

Max. loading volume of EzPure™ Filter : ~ 600 μℓ

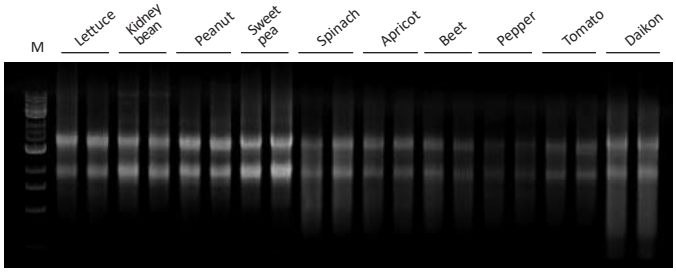
Max. loading volume of spin column : ~ 750 μℓ

Min. elution volume : 30 μℓ

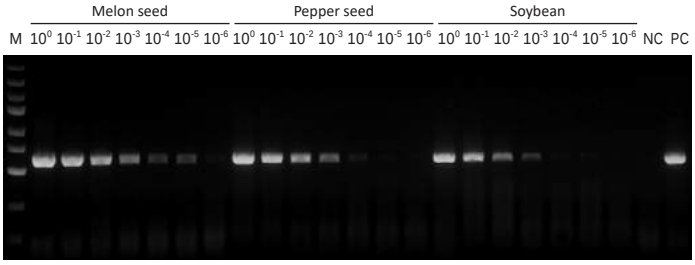
Preparation time : ~ 30 min

Cat. No.	Products	Type	Size
317-150	Ribospin™ Seed / Fruit	Spin	50

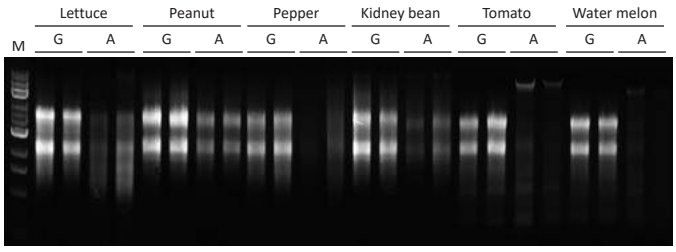
RNA Purification Results



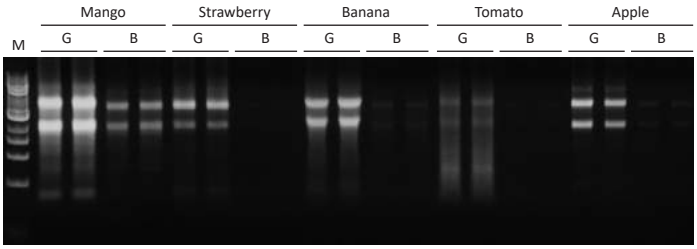
Total RNA was extracted from several kinds of seeds using Ribospin™ Seed / Fruit RNA kit. The extracted RNA was confirmed by electrophoresis.



RT-PCR was applied for CGMMV detection from infected seeds. The template RNA was isolated by Ribospin™ Seed / Fruit RNA kit and one-step RT PCR was adopted for RNA virus detection. The sensitivity of PCR was identified by serial diluted template detecting more than 10^{-4} dilution factor.
The PCR product was confirmed by electrophoresis.
Lane M : 250 bp ladder
Lane NC : Negative control
Lane PC : Positive control

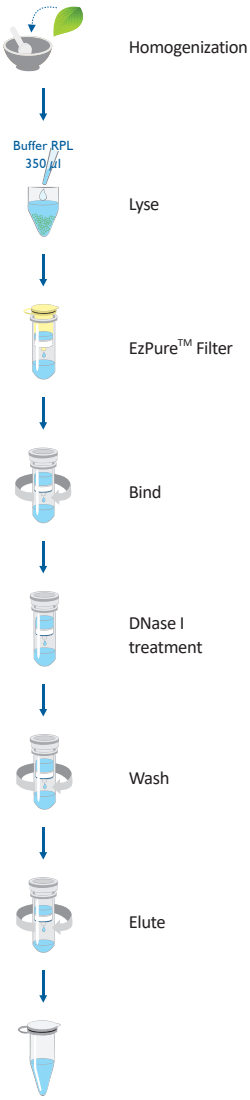


Total RNA was isolated from five different kinds of seeds using Ribospin™ Seed / Fruit RNA kit and supplier A kit. The extracted RNA was confirmed by electrophoresis.
Lane M : 250 bp ladder



Total RNA was isolated from five kinds of fruits using Ribospin™ Seed / Fruit RNA kit and supplier B kit. The extracted RNA was confirmed by electrophoresis.
Lane M : 250 bp ladder

Procedures



Component list

Column Type F (with collection tube)
EzPure™ Filter (with collection tube)
1.5 ml microcentrifuge tube
DNase I
Buffer SL
Buffer ML
Buffer RBW
Buffer RNW
Buffer DRB
Nuclease-free water
Protocol Handbook

Riboclear™ (Plus)

For RNA cleanup from various RNA samples

Description

Riboclear™ provides an easy and rapid method for RNA cleanup or concentration from various RNA samples in just 6 minutes. Riboclear™ eliminates alcohol precipitation by binding of RNA with column, allowing rapid and convenient preparation from various samples simultaneously. Purified RNA with Riboclear™ series are free of salts and enzymes in yields reaching 95% and are suitable for dot blotting, *in vitro* translation, cloning, RT-PCR, RNase protection assays and other analytical procedures. Riboclear™ Plus kit provides DNase I for removal of DNA and micro column for concentration of total RNA.

Features and Benefits

- Preparation time : ~ 6 minutes / ~ 17 minutes (Plus)
- Stable and consistent yield
- High recovery rate : ~ 95%
- No use of organic solvents
- No ethanol precipitation
- Complete removal of salts and enzymes
- Ready for use in RT-PCR, northern blotting, dot blotting, *in vitro* translation, molecular cloning, real-time PCR, RNase protection assays and other analytical procedures

Riboclear™

Format : Column Type F
(with 2.0 ml collection tube)

Sample size : 100 μℓ

Recovery Rate : ~ 95%

Preparation time : ~ 6 min

Application volume : ~ 750 μℓ

Min. elution volume : 30 μℓ

Binding capacity : ~ 500 μg

Riboclear™ Plus

Format : Column Type S (Micro),
(with 2.0 ml collection tube)

Sample size : 100 μℓ

Recovery Rate : ~ 95%

Preparation time : ~ 17 min
(included DNase I treatment processing)

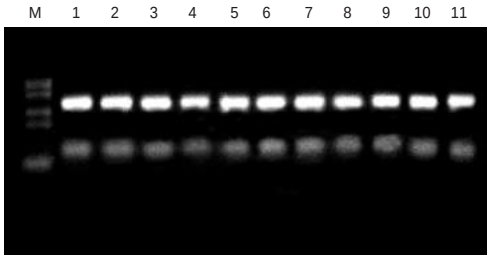
Application volume : ~ 800 μℓ

Min. elution volume : 20 μℓ

Binding capacity : ~ 100 μg

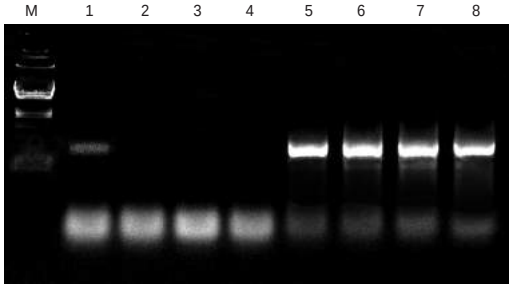
Cat. No.	Products	Type	Size
303-150	Riboclear™	Spin	50
313-150	Riboclear™ Plus	Spin	50

Reproducibility Test



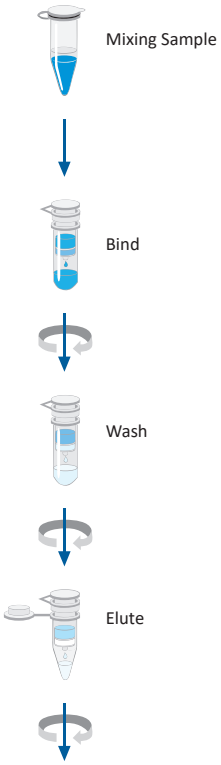
The consistency of the purified RNA using Riboclear™ was confirmed by electrophoresis.
Lane M : Lambda-HindIII
Lane 1 : Extracted Total RNA from Hybrid-R™
Lane 2 ~ 11 : The purified RNA from Riboclear™

Downstream Application Test



The purified RNA using Riboclear™ Plus. And the cDNA was synthesized by reverse transcriptase. The cDNA was amplified by PCR and confirmed by electrophoresis.
Lane M : Lambda-HindIII
Lane 1 : PCR analysis of RNA eluate undigested by DNase I
Lane 2 ~ 4 : PCR analysis of RNA eluate digested by DNase I
Lane 5 : PCR analysis of synthesized cDNA from RNA in Lane 1
Lane 6 ~ 8 : PCR analysis of synthesized cDNA from RNA in Lane 2 ~ 4

Procedures



Component list
Column Type F (with collection tube)
Column Type S (with collection tube), (Plus only)
1.5 ml microcentrifuge tube
Buffer MS
Buffer RNW
Buffer DRB (Plus only)
Nuclease-free water
DNase I (Plus only)
Protocol Handbook

Allspin™

For total RNA & DNA isolation from tissues and cultured cells

Description

Allspin™ total DNA / RNA purification kit provides a convenient method for the isolation of total DNA and total RNA simultaneously from a single sample of tissue or cultured cells. DNA and RNA are purified separately from a same sample by individual but successive procedure using column B and column W respectively. Whole procedure can be performed in just 30 minutes and the length of obtained DNA is up to 50 kb (average is 30 kb) and that of RNA is longer than 200 nucleotides.

Features and Benefits

- Glassfiber membrane technology
- Sample size : ~ 30 mg tissue or ~ 1 x 10^7 cultured cells
- Typical yield of RNA : ~ 20 μg / 1 x 10^6 cultured cells
  ~ 60 μg / 10 mg liver tissue
- Typical yield of DNA : ~ 10 μg / 1 x 10^6 cultured cells
  ~ 25 μg / 10 mg liver tissue
- High purity
- Preparation time : ~ 30 minutes
- Stable and consistent yield
- No phenol / chloroform extraction
- No ethanol precipitation
- Ready for use in RT-PCR, northern blotting, dot blotting, *in vitro* translation, molecular cloning, real-time PCR, RNase protection assays and other analytical procedures

Allspin™ Column Type B for DNA

Format : Column Type B (with 2.0 ml collection tube)

Color : Red ring

Sample size : ~ 30 mg tissue or ~ 1 x 10^7 cells

Application volume : ~ 700 μℓ

Min. elution volume : ~ 50 μℓ

Binding capacity : ~ 100 μg

Nucleic acid binding size : ~ 50 kb

Allspin™ Column Type W for RNA

Format : Column Type B (with 2.0 ml collection tube)

Color : Blue ring

Sample size : ~ 30 mg tissue or ~ 1 x 10^7 cells

Application volume : ~ 700 μℓ

Min. elution volume : ~ 30 μℓ

Binding capacity : ~ 100 μg

Nucleic acid binding size : > 200 nucleotides

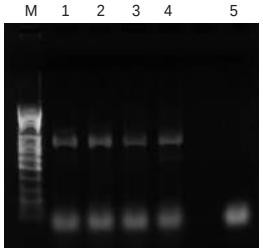
Cat. No.	Products	Type	Size
306-150	Allspin™	Spin	50

The Yield of Genomic DNA and Total RNA from Various Starting Materials Using Allspin™.

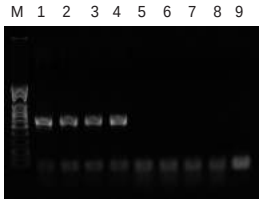
Materials	Sample type	Yield of genomic DNA	Yield of Total RNA
Cultured cell (≒ 1 x 10^6)	CHO	~ 7 μg	~ 15 μg
	RAW 264.7	~ 10 μg	~ 20 μg
Tissue (rat) (10 mg / prep)	Liver	~ 25 μg	~ 60 μg
	Kidney	~ 25 μg	~ 30 μg
	Brain	~ 12 μg	~ 10 μg
	Heart	~ 10 μg	~ 9 μg
	Spleen	~ 70 μg	~ 80 μg

* The yield of genomic DNA and total RNA may vary depending on the tissue or cells from which it is obtained.

Comparison Data



RT-PCR results from total RNA of rat heart tissue using Allspin™ and supplier A kit were analysed on a 1% agarose gel.
Lane M : 100 bp ladder
Lane 1, 2 : PCR of cDNA from Allspin™
Lane 3, 4 : PCR of cDNA from supplier A
Lane 5 : Negative control



PCR result from genomic DNA and total RNA eluate of CHO cells.
Lane M : 100 bp ladder
Lane 1, 2 : Genomic DNA eluate from Allspin™
Lane 3, 4 : Genomic DNA eluate from Supplier A
Lane 5, 6 : Total RNA eluate from Allspin™
Lane 7, 8 : Total RNA eluate from Supplier A
Lane 9 : Negative control

Fig. I

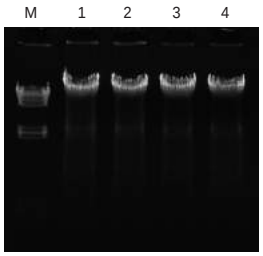
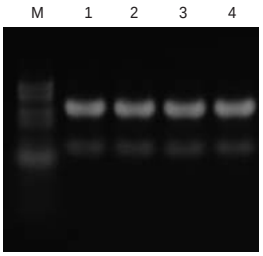


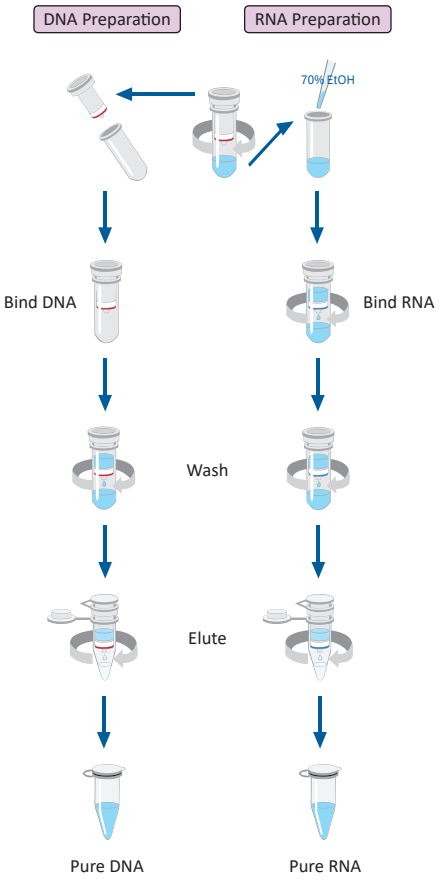
Fig. II



Genomic DNA and total RNA were purified from RAW264.7 cells using Allspin™ and supplier A kit.
Fig. I Genomic DNA were analysed on a 1% agarose gel
Lane M : Lambda-HindIII
Lane 1, 2 : Genomic DNA from Allspin™
Lane 3, 4 : Genomic DNA from Supplier A

Fig. II Total RNA were analysed on a 1% formaldehyde agarose gel
Lane M : 0.5 ~ 10 kb RNA ladder
Lane 1, 2 : Total RNA from Allspin™
Lane 3, 4 : Total RNA from Supplier A

Procedures



Component list

Column Type B (red ring),
(with collection tube)
Column Type W (blue ring),
(with collection tube)
Collection tube
1.5 ml microcentrifuge tube
Buffer CTL
Buffer GW1
Buffer BW
Buffer RNW
Buffer AE
Nuclease-free water
Protocol Handbook

RiboSaver™

For stabilization of RNA in harvested animal tissues and cultured cell

Description

RiboSaver™ is a preservation solution to stabilize cellular RNA in biological specimens such as tissues and cultured cells. The harvested samples submerged in RiboSaver™ can be easily stored or transported at ambient temperature without any cooling method such as liquid nitrogen or dry-ice. RNA isolation from the samples stabilized by RiboSaver™ is compatible with most conventional or commercial RNA extraction methods.

Features and Benefits

- Store both tissue and cells without risk of nucleic acid degradation
- Immediate stabilization and subsequent transport or storage
- Convenient and safe handling at room temperature
- No need for liquid nitrogen or dry ice
- Directly applicable to numerous RNA purification kits and another downstream applications

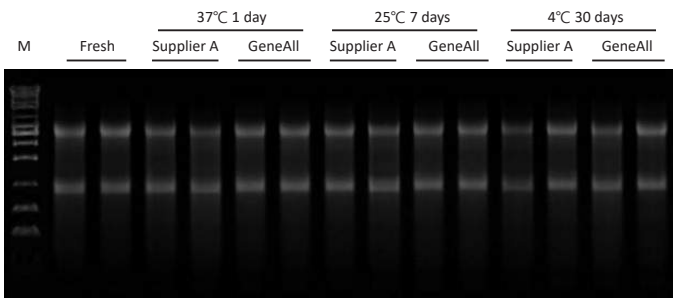
Storage temperature and period condition

Storage temperature	Storage period
37°C	1 day
18 ~ 25°C	7 days
4°C	30 days
-20°C and below	Several months

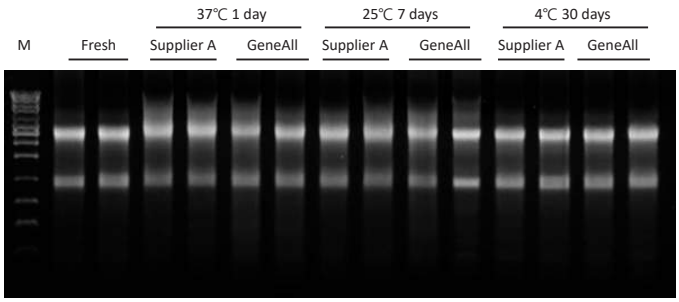
The RiboSaver™ solution stored at -20°C would not freeze but some precipitates may form. There is no need to re-dissolve the precipitates that not affect subsequent RNA isolation. In storage at -80°C, the whole solution including samples will be frozen. For RNA isolation, the solution needs to thaw completely at room temperature.

Cat. No.	Products	Type	Size
351-001	RiboSaver™	Solution	100

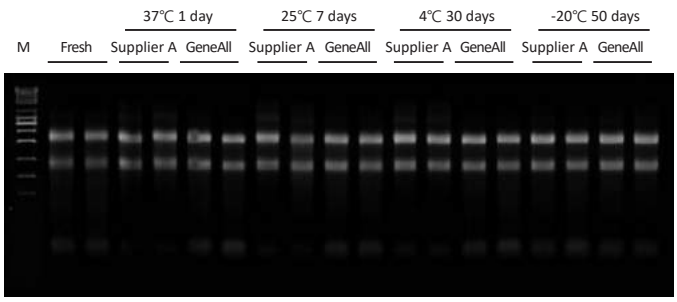
Results of Extracted Nucleic Acid from Stabilized Samples in RiboSaver™



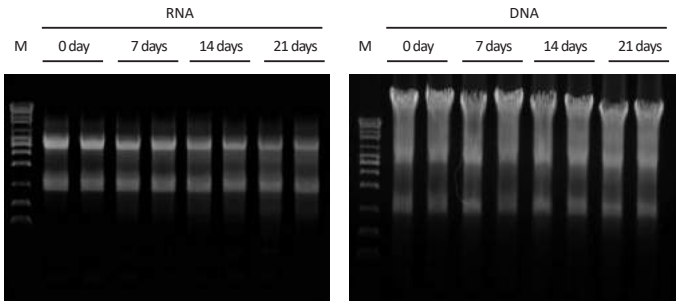
Total RNA was isolated from HeLa cells stored in RiboSaver™ or Supplier A as shown.



Total RNA was isolated from lung tissue (rat) stored in RiboSaver™ or Supplier A as shown.



Total RNA was isolated from *E. coli* (DH5α) stored in RiboSaver™ or Supplier A as shown.



To confirm the preservation of samples in RiboSaver™, total RNA and genomic DNA were isolated from Jurkat cells stored in RiboSaver™ at RT during various periods.

Procedures

Animal Tissue

Cut fresh tissue

↓

Add 5 ~ 10 volumes of RiboSaver™
(e.g. Add 0.5 ~ 1 ml of RiboSaver™ per 100 mg of tissue.)

Cultured cells

Resuspend cells in 50 μℓ of PBS or residual supernatant

↓

Add 5 ~ 10 volumes of RiboSaver™
(e.g. Add 250 ~ 500 μℓ of RiboSaver™ per 50 μℓ of cell suspension.)

Component list

RiboSaver™ RNA Stabilization solution
Protocol Handbook

Visit GeneAll® Community
www.geneall.com
www.geneall.co.kr

Mailing Address
GeneAll Biotechnology Co., LTD.
GeneAll Bldg., 303-7 Dongnam-ro,
Songpa-gu, Seoul, South Korea 138-859

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Tel: 82-2-407-0096
Fax: 82-2-407-0779
E-mail: sales@geneall.com

Technical information
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Fax: 82-2-407-0779
E-mail: tech@geneall.com

Customer & Technical Support
Do not hesitate to ask us any question.
We thank you for any comment or advice.