BECKMAN COULTER
Life Sciences

Total RNA Extraction from Tissues

RNAdvance Tissue

The RNAdvance Tissue kit is a ribonucleic acid (RNA) isolation reagent kit built on SPRI paramagnetic bead-based technology. It enables extraction of total RNA from a wide variety of tissues without the hazards and waste removal issues of organic solvents or the time and labor consuming steps of vacuum filtration and centrifugation procedures. The extraction can be run manually in a 2 mL tube format or 96-well format, or automated in 96-well format on variety of Beckman Coulter Biomek liquid handling workstations. This extraction process produced higher recovery of total RNA than traditional column-based approaches in the experiments conducted for this datasheet.

- Compatible with PCR based applications
- Extraction and purification of high quality RNA from many tissue types
- Efficient removal of genomic DNA and other contaminants

High recovery of RNA from a varity of tissue types without sacrificing purity

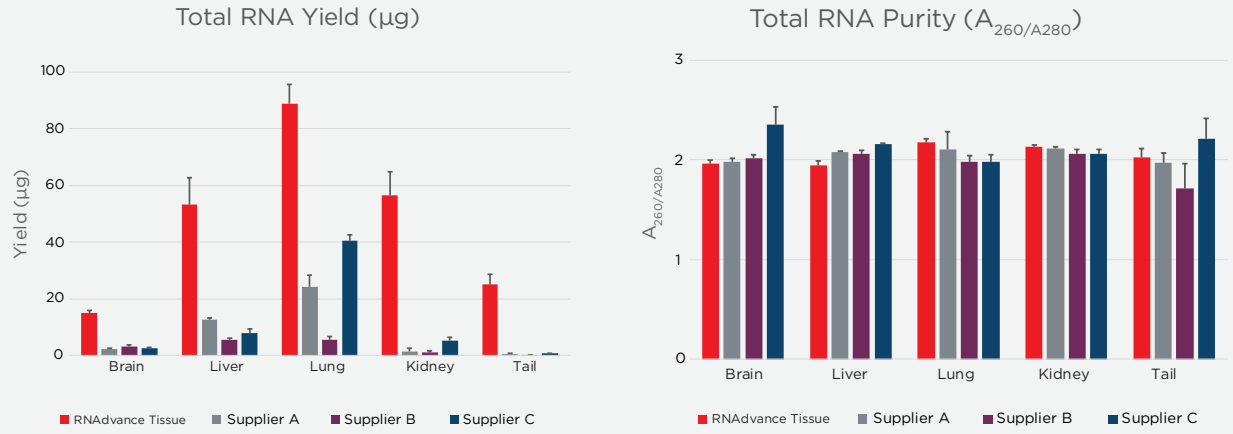


Figure 1. RNA was extracted from 10mg of brain, liver, lung, kidney or tail tissues using the RNAdvance Tissue and other commercially available kits. (Left) RNA yield was quantified using the NanoDrop (Thermo Fisher Scientific). RNAdvance Tissue recovered higher amounts of RNA from the five different tissue types used than the other commercially available kits. (Right) Samples were assessed for purity using the NanoDrop (Thermo Fisher Scientific). For all tissue types, RNAdvance tissue purified RNA with satisfactory $A_{260/280}$ ratios.

Remarkable RNA quality

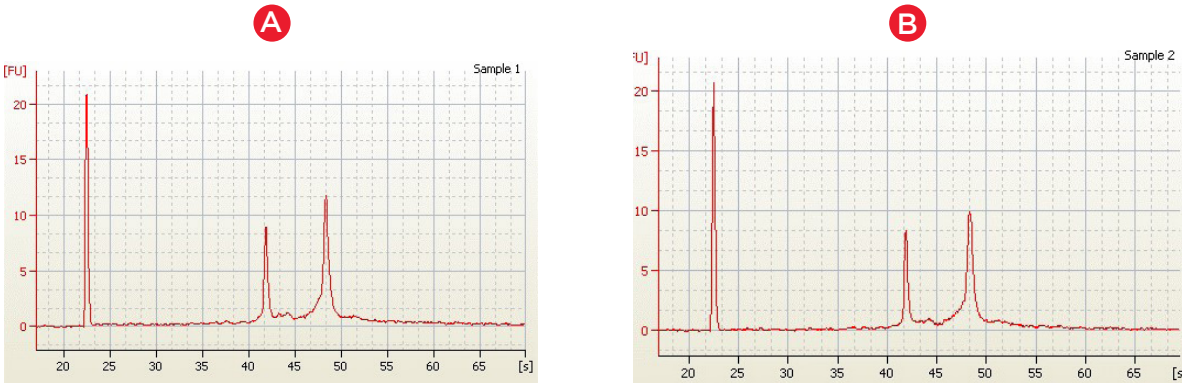


Figure 2. RNA extracted from 10mg of brain tissue using RNAdvance Tissue was run on the Agilent 2100 Bioanalyzer eukaryote total RNA Nano chip. Above, two traces of RNA extracted from brain tissue are shown. The RIN scores were >9 indicating that high quality and intact RNAs were recovered.

Users can extract RNA from samples in less time and with less pipette actions compared to users of column based kits

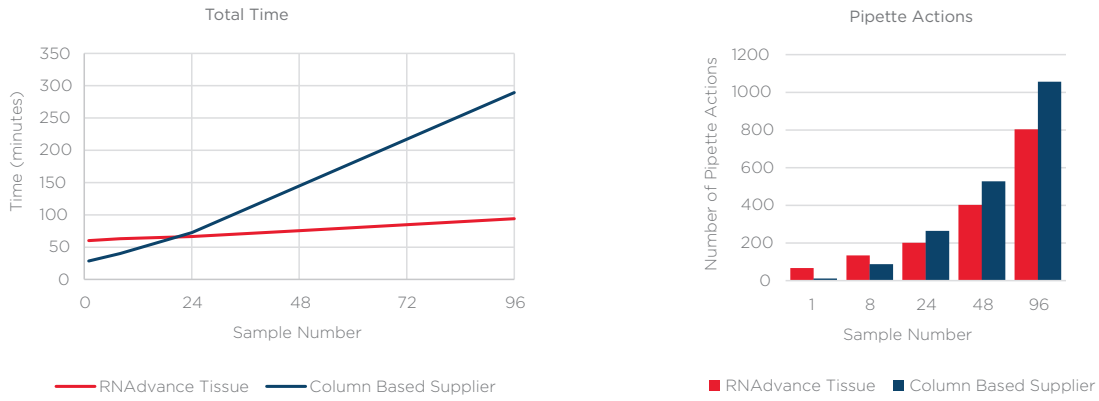
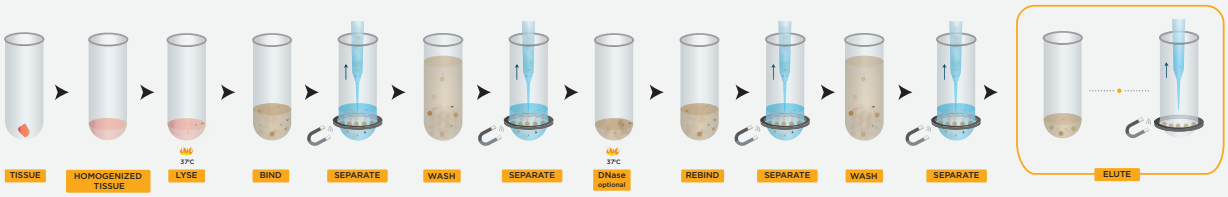


Figure 3. (Left) Represents total time to extract RNA for 1 to 96 samples using RNAdvance Tissue kit or a column based kits. At 20 samples total time to extract RNA from tissues is faster using RNAdvance Tissue kit. (Right) The total number of pipette actions, which include dispensing in a sample, mixing a sample, and discarding tips, required for 1, 8, 24, 48, and 96 samples. With the ability to use a multichannel pipette there is significantly less pipette actions at greater than 8 samples that need to take place than with column based kits.

Visual Workflow



1. Lyse tissue in Lysis Buffer and Proteinase K
2. Bind RNA to magnetic beads
3. Separate magnetic beads from contaminants
4. Wash magnetic beads with Wash Buffer and 70% ethanol to remove contaminants
5. Treat samples with DNase I
6. Rebind RNA to magnetic beads with Wash Buffer
7. Wash magnetic beads with 70% ethanol to remove contaminants
8. Elute RNA from magnetic beads
9. Transfer to new plate for storage

RNAdvance Tissue provides RNA suitable for downstream applications

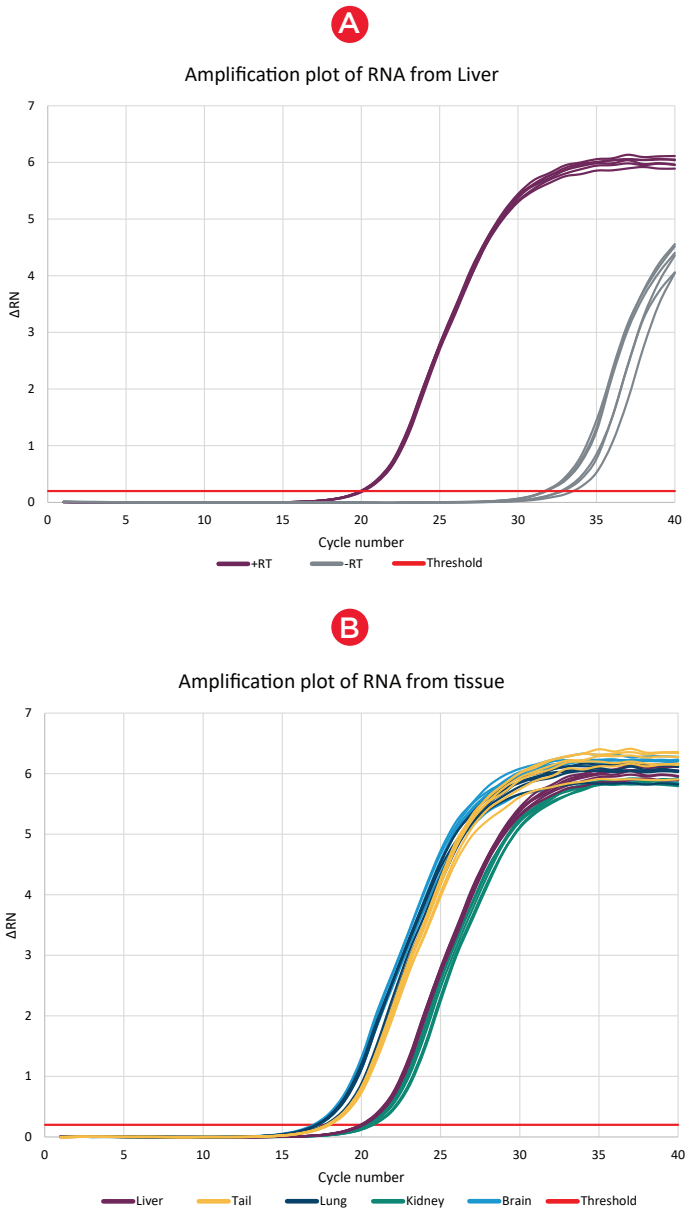


Figure 4. PCR amplifiability was assessed via qRT-PCR using a primer set (forward primer 5´-ggacttcgagcaagagatgg-3´ and reverse primer 5´-agcactgtgttggcgtacag-3´) designed to span Exon 4 and 5 of the beta (β)-actin gene (ActB) to produce 327 base pair amplicons. (Top) The no RT control also demonstrates the removal of DNA that can interfere with downstream RNA applications. (Bottom) The RNA isolated using the RNAdvance Tissue kit was amplifiable indicating that the kit removed PCR inhibitors. These results indicate the usability of the RNA for downstream PCR applications.

For use in manual or automated methods based on batch size or overall throughput

			RNAdvance Tissue	
			Manual	Automated
Batch Size	8	Hands-on Time	0.25	0.25
		Total Time	1.00	2.50
	24	Hands-on Time	0.25	0.25
		Total Time	1.10	2.50
	96 No DNAse Treatment	Hands-on Time	NR	0.25
		Total Time	NR	2.00
	96	Hands-on Time	NR	0.25
		Total Time	NR	2.50

Table 1. Estimated hands-on time and total time in hours required to perform 8, 24 and 96 RNAdvance Tissue RNA extractions. The extraction can be performed either manually or automated on a liquid handling system. The automated times reflect extraction performed on a Biomek i5 Multichannel 96 Genomics Workstation. Difference in time between manual and automation is indicated. NR=Not Recommended.

RNAdvance Tissue Reagent Kit is available in three kit sizes based on your throughput needs. Contact your local sales representative or visit beckman.com to request a quote.

Product Information

Part No	Name	Preps
A32645	RNAdvance Tissue Kit	50
A32649	RNAdvance Tissue Kit	96
A32646	RNAdvance Tissue Kit	384

For more information, please contact:

For Beckman Coulter's worldwide office locations and phone numbers, please visit Contact Us at beckman.com

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