BECKMAN COULTER
Life Sciences

Viral RNA Extraction from Saliva and Swab Samples

RNAdvance Viral and RNAdvance Viral XP

The RNAdvance Viral kits are ribonucleic acid (RNA) isolation chemistries built on SPRI paramagnetic bead-based technology. SPRI technology enables purification of high-quality RNA with demonstrated compatibility with up to 200 µL of saliva or swab transport media. The protocol can be performed in a single tube or 96-well format with the flexibility to automate on a variety of liquid handling platforms. Viral RNA extraction begins with lysis of the viral capsid from a variety of sample inputs, including saliva and nasopharyngeal or oropharyngeal swabs. Following lysis, the magnetic beads capture the RNA; washes are then performed to rinse away contaminants including amplification inhibitors.

- Produces high-quality RNA compatible with downstream gene expression analysis techniques, such and qRT-PCR and NGS
- Flexible SPRI technology is amenable to liquid handlers for high-throughput sample processing
- Performance Limit of Detection (LoD) demonstrated at 1 copy/µL

RNAdvance Viral Extraction from Saliva and NP/OP Swab Samples - Analytical Performance

	2019-NCOV_N1		2019-NCOV_N2		2019-NCOV_N3	
RNA Concentration (copies/µL)	1	2	1	2	1	2
No. of positives/ Total No. of replicates	4/4	4/4	4/4	4/4	4/4	4/4
Mean Ct	34.83	35.15	35.17	34.21	35.95	35.48

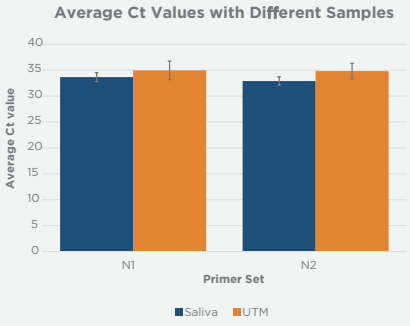

Table 1. (left) RNA was extracted from transport media spiked with Exact Diagnostics SARS-CoV-2 Standard at concentrations of 1 and 2 copies/µL RNA and run in quadruplicates. Ct value was assessed via qRT-PCR for N1, N2 and N3 genes. Both samples containing 1 and 2 copies/µL had comparable Ct values and confirmed 1 copy/µL LoD.

Figure 1. (right) RNA was extracted from 5 saliva samples and 5 Healthlink UTM collection tubes spiked with 1 copy/µL of SARS-CoV-2 isolate and extracted in triplicates. Ct values were assessed by qRT-PCR for N1, N2 and RP (not shown) gene. When comparing saliva and UTM, saliva had lower average Ct values (1 to 2) and less variability with SD of 0.85 and 1.78 for N1 and N2, respectively.

Extracting RNA from samples can be done efficiently in both manual or automated workflows depending on batch size and overall throughput need

			RNAdvance Viral		RNAdvance Viral XP	
			Manual	Automated	Manual	Automated
Batch	24	Hands-on Time	1 hr, 30 min	15 min	0.25	10 min
		Total Time	2	1 hr, 15 min	0.75	55 min
	96	Hands-on Time	NR	15 min	NR	10 min
		Total Time	NR	1 hr, 15 min	NR	55 min
	192	Hands-on Time	NR	15 min	NR	10 min
		Total Time	NR	1 hr, 30 min	NR	1 hr, 15 min

Table 4. The estimated hands-on time and total time in hours, required to perform 24, 96 and 192 RNAdvance Viral RNA extractions. The methods can be performed either manually or automated on a liquid handling system. Data represented in this table is based on a Biomek i5 Nucleic Acid Solution. NR=Not Recommended.

Product Information

Part No	Name	Preps
C63510	RNAdvance Viral	768
C59543	RNAdvance Viral XP	1056

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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