Catalog # R05210 (1X)
Catalog # R05211 (10X)

One-Step DNA/RNA Extraction Buffer

For research use only
Store at room temperature

01 INTRODUCTION

The **One-Step DNA/RNA Extraction Buffer** provides a simple one-step solution for the quick extraction of DNA and RNA from biological and environmental samples. The procedure allows high throughput sample processing through a single room temperature incubation step and eliminates the need for spin columns, heat, or toxic phenol-chloroform extraction. The buffer is stable at room temperature, DNase and RNase-Free, and does not require the addition of any other organic solvents or proteins.

To process a sample, add One-Step DNA/RNA Extraction Buffer, briefly homogenize, and incubate at room temperature for ten minutes. Optional processing steps such as DNase treatment, mechanical agitation, and heat incubation may be performed to improve sample yield and performance in downstream applications. The solution is non-inhibitory to PCR and high percentages of lysate may be added directly to PCR reactions. Extracted DNA or RNA can be used for direct PCR, qPCR and RT-qPCR-based analysis and screening.

One-Step DNA/RNA Extraction Buffer is available at 1X (Cat # R05210) and 10X (Cat # R05211) concentrations and supports different samples including viruses, bacteria, protozoa and animal cells. The 1X concentration is ideal for swabs, membrane filters, bacteria cultures, and cell pellets while the 10X concentration may be used for liquid samples such as water, biofluid and transport media. One-Step DNA/RNA Extraction Buffer is provided at 100 mL and 500 mL volumes for the 1X concentration, 10 mL and 50 mL volumes for the 10X concentration, and is available license-free for OEM use.

02 PRODUCT SIZING

Concentration	Size	Catalog Number	Volume
1X	1 x 100 mL	R05210S	100 mL
	5 x 100 mL	R05210M	500 mL
	5 x 500 mL	R05210L	2.5 L
	25 x 500 mL	R05210XL	12.5 L
10X	1 x 10 mL	R05211S	10 mL
	5 x 10 mL	R05211M	50 mL
	5 x 50 mL	R05211L	250 mL
	25 x 50 mL	R05211XL	1.25 L

03 PRODUCT SPECIFICATIONS

Buffer Storage

Store One-Step DNA/RNA Extraction Buffer at ambient temperature (15 – 30 ˚C).

Lysate Storage and Stability

Lysate stability will vary by sample type. Viral RNA lysed from the bacteriophage MS2 has shown to be stable up to 72 hours at room temperature (25˚C), 4 ˚C, and -20 ˚C post-lysis. Perform validation testing for individual sample types. Lysate stability and storage recommendations for most samples are as follows:

DNA: Stable at 25 ˚C for 72 hours; store at 4 ˚C for short-term and -20 ˚C for long-term storage.
RNA: Stable at 25 ˚C, 4 ˚C and -20 ˚C for up to 24 hours; store at -70 ˚C or below for long-term storage.

04 PROTOCOL

A. One-Step DNA/RNA Extraction Buffer 1X

1. Add One-Step DNA/RNA Extraction Buffer 1X to the sample. 200 µL – 500 µL is generally sufficient for swabs, membrane filters, and cell pellets. The required buffer volume may vary by sampsize. Mix completely by vortexing for 15 seconds, then incubate the sample at room temperature for a minimum of 10 minutes.

Optional: If extracted RNA will be used for PCR in conditions where primers are not designed to avoid DNA amplification, perform in-tube DNase treatment after sample incubation to remove genomic DNA (gDNA).

2. Proceed with PCR analysis or store the sample lysate at the recommended storage temperature. Large volumes of the lysate may be used in PCR reactions; up to 30% volume of the lysate has been tested in conjunction with Chai **Sahara One-Step RT-qPCR Master Mix with UNG** with no inhibition.

B. One-Step DNA/RNA Extraction Buffer 10X

1. Add One-Step DNA/RNA Extraction Buffer 10X at a 1:10 v/v of buffer to sample. For a 180 µL liquid sample, for example, add 20 µL of 10X buffer. The required buffer volume may vary by sample size. Mix completely by vortexing for 15 seconds, then incubate the sample at room temperature for a minimum of 10 minutes.

Optional: If extracted RNA will be used for PCR in conditions where primers are not designed to avoid DNA amplification, perform in-tube DNase treatment after sample incubation to remove genomic DNA (gDNA).

2. Proceed with PCR analysis or store the sample lysate at the recommended storage temperature.

05 TROUBLESHOOTING

1. Incubating the sample at 60 ˚C for 1 – 5 minutes after the 10 minute room temperature incubation may improve the extraction yield. Mechanical agitation is recommended for more difficult sample types.

2. If the DNA/RNA yield is low, increase the amount of initial sample, the duration of sample lysis, and/or intensity of homogenization. Avoid harsh vortexing by allowing breaks in between pulses and store sample lysate according to recommendations to prevent DNA/RNA degradation.

3. DNase and/or RNase contamination may result during or after the processing of samples. Improper storage or handling of the initial sample may cause endogenous RNases to degrade RNA. Immediately add sufficient chaotrope or denaturant to inactivate RNases in sample. Do not let the sample thaw if it is already frozen.

4. Overloading the extraction system may result in poor DNA/RNA yield and/or PCR inhibition in downstream applications. Reduce the initial sample volume or dilute the crude extract if necessary. Sample lysate may be homogenized thoroughly and centrifuged to pellet debris. Use only the supernatant for downstream applications.

06 CONTACT

For additional assistance on extraction protocol, sample stability, and PCR analysis, contact support@chaibio.com or your local distributor.

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