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SOLIScript® Fast 1-step RT-qPCR Mix with UNG

solisbiodyne.com

Sensitive 5-plex detection | 1-tube format | With UNG | Fast cycling | Inhibitor tolerance

SOLIScript® Fast 1-step RT-qPCR Mix with UNG is optimized for probe-based one-step RT-qPCR assays. It contains all components necessary in one tube (except template and primers) to perform cDNA synthesis and qPCR with up to 5-targets within around 1h of total reaction time. It also contains the **RNase Inhibitor RiboGrip™** to protect RNA sample from degradation. Inhibitor tolerance and fast cycling allow flexible experiment design.

SOLIScript® RT is an *in silico*-engineered thermostable reverse transcriptase that retains activity at higher temperatures (up to 60°C) to provide specific results when working with templates with high level of secondary structures.

HOT SolisFAST® DNA Polymerase is an *in silico* designed analogue of *Taq* DNA polymerase with enhanced stability at room temperature, chemical hot-start, increased tolerance to inhibitory substances and approximately 2-4 times faster extension rates compared to the wild-type *Taq* DNA polymerase.

Salini UNG™ Uracil-N-Glycosylase is incorporated into the product along with dUTPs to prevent carryover contamination and false positive results.

Routine storage at -20°C
Shipping conditions:
at room temperature

Dry ice-free shipping!

Wide dynamic range

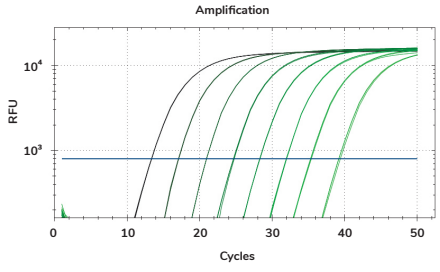

Figure 1. PPIA target from human total RNA was amplified over eight 10-fold dilutions (1000 ng to 100 fg, R^2=1.0), showing sensitive detection over a wide dynamic range. Reactions were ran on Bio-Rad CFX96 platform.

Prevent carryover contamination

RT-qPCR reactions with two products, SOLIScript® Fast 1-step RT-qPCR Mix with UNG and a version without UNG were spiked with equal concentration of dU-containing amplicons, mimicking **carryover contamination**. While the reagent without UNG generated a regular amplification curve (purple, Figure 2), **SOLIScript® Fast 1-step RT-qPCR Mix with UNG degraded the dU-containing amplicons** (red, Figure 2), resulting in no amplification from the mimicking carryover contamination.

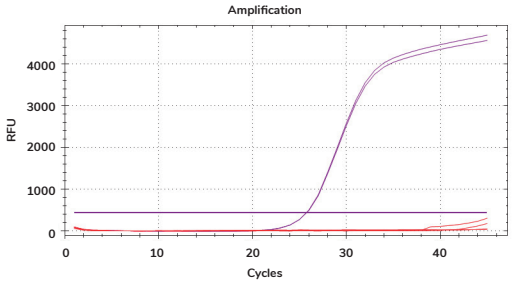

Figure 2. Amplification plot showcasing results with SOLIScript® Fast 1-step RT-qPCR Mix with UNG (red) and a formulation without UNG (purple). Reactions were ran on Bio-Rad CFX96 platform.

Effective 5-plex amplification

Five-plex RT-qPCR reactions with SOLIScript® Fast 1-step RT-qPCR Mix with UNG show **strong amplification and consistent efficiencies** across all five targets with different charateristics.

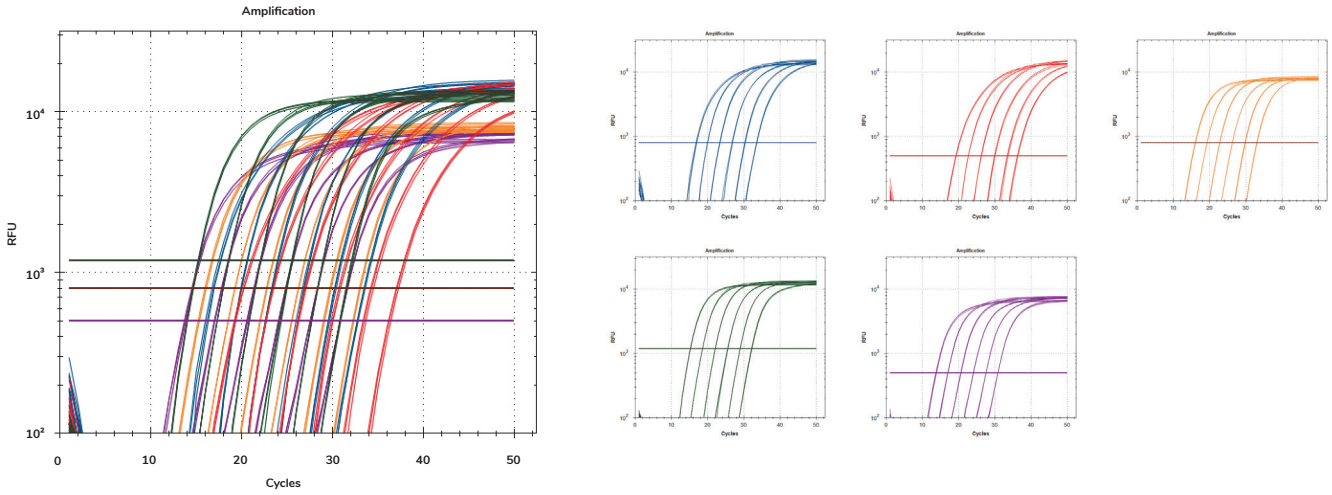

Figure 3. Five-plex RT-qPCR reactions (FAM, blue HEX, green; ROX, red; Cy5, puprle; Cy5.5, orange) on Bio-Rad CFX96 platform with six 10-fold serial dilutions of reference human total RNA (from 1000 ng/µl to 0.01 ng/µl).

Simultaneous amplification of RNA and DNA targets

A test system for simultaneous detection of RNA and DNA targets was created. Four 10-fold dilutions of plasmid DNA and synthetic SARS-CoV-2 ssRNA were used while human total RNA was kept at a constant concentration in all reactions. All targets were amplified with good sensitivity and linearity (efficiencies from 95% to 101%, R^2>0,99), enabling development of assays where RNA viruses, DNA viruses and bacterial targets can be codetected effectively from just one RT-qPCR reaction.

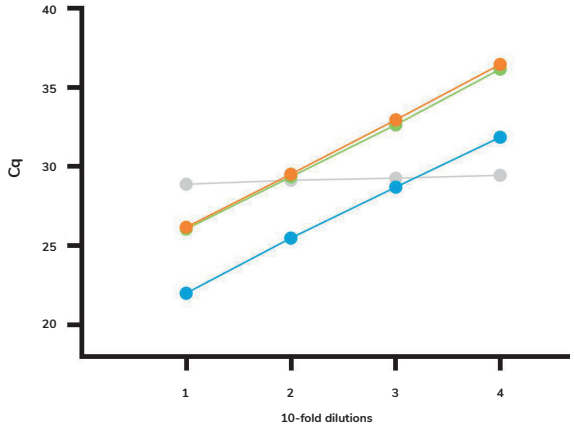

Figure 4. Four-plex RT-qPCR reactions (FAM, blue; SUN, orange; ROX, green; Cy5, grey) with four 10-fold dilutions were performed on Bio-Rad CFX96 platform.

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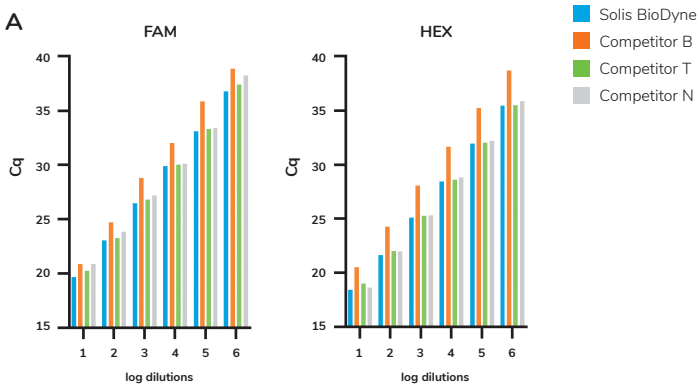
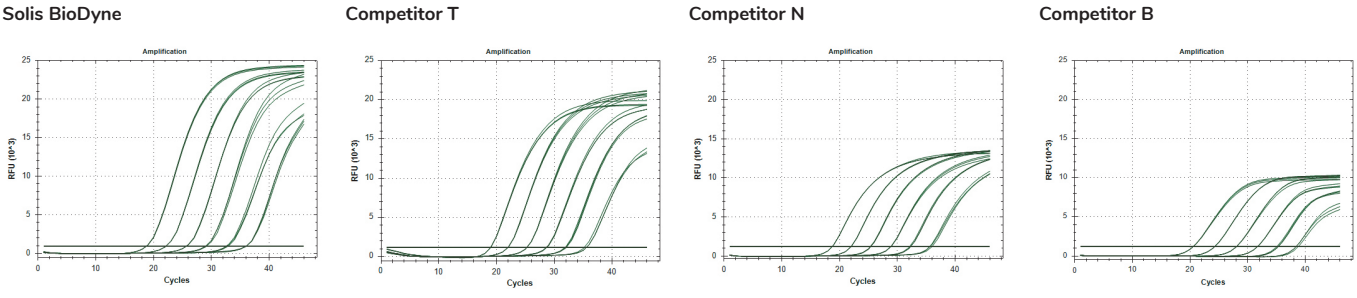
Competitive performance

Five-plex RT-qPCR reactions with SOLIScript® Fast 1-step RT-qPCR Mix with UNG show **competitive performance** (Figure 5A) and **superior fluorescence intensity** (Figure 5B) over three tested competitor products.

Figure 5. Five-plex RT-qPCR reactions were performed with SOLIScript® Fast 1-step RT-qPCR Mix with UNG and three competitor products. Six 10-fold dilutions of human total RNA (from 100 ng/rxn to 1 pg/rxn) were tested. Reactions were ran on the Bio-Rad CFX96 platform and reaction conditions were chosen according to each manufacturer's instructions. (A) Cq values from the 5-plex reactions (results from FAM and HEX channel presented). (B) Amplification plots from the 5-plex reactions (results from HEX channel presented).



B



Inhibitor tolerance

Several inhibiting substances, often interfering with RNA work, were spiked to RT-qPCR reactions in concentrations indicated in column 3, Table 1. Two competitor products were included in the panel along with SOLIScript® Fast 1-step RT-qPCR Mix with UNG. Cq shifts between reactions without and with the inhibitors are presented. Whereas the **Cq did not increase by more than 1 with SOLIScript® Fast 1-step RT-qPCR Mix with UNG** at the indicated concentrations, competitor products showed a higher degree of inhibition.

Source	Inhibitor	Concentration	SOLIScript® Fast 1-step RT-qPCR Mix with UNG	Competitor T	Competitor B
Blood samples	Heparine	2 ng/µl	0.09	1.39	0.28
	Hematin	7 µM	0.57	2.81	0.88
	EDTA	2 mM	0.42	4.11	2.47
Urine	Urea	0.4 M	-0.04	0.00	3.81
Stool	Bile salts	0.5 mg/ml	0.84	0.90	1.18
Sample preparation	EtOH	3 %	0.93	0.26	0.6
	Tween 20	2 %	0.84	1.36	1.56
	PBS	50 %	-1.01	-0.11*	1.04
Plants	Tannic acid	35 ng/µl	-0.09	4.68	1.71
Soil	Humic acid	1 ng/µl	0.53	2.86	0.1

Table 1. Results from inhibitor tolerance tests. Reactions were ran on the Bio-Rad CFX96 platform and cycling conditions were chosen according to each manufacturer's instructions.

Cq shift less than +1

Cq shift between +1 to +2

Cq shift more than +2

* due to reagent concentration, only 40% of PBS was added to the reaction with the product from Competitor T

Lot-to-lot consistency

Results from lot-to-lot consistency tests showcase that production under strict quality systems ensures **reliable consistency between independent production lots** of SOLIScript® Fast 1-step RT-qPCR Mix with UNG.

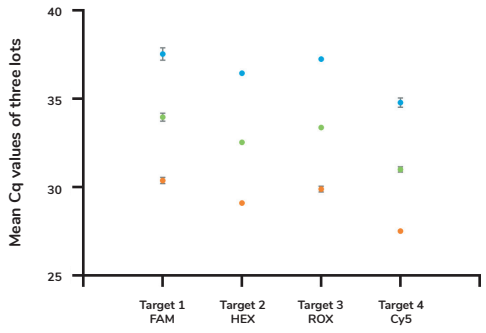


Figure 6. Results from lot-to-lot consistency tests with 4-plex RT-qPCR reactions over three 10-fold RNA dilutions (0.1 ng/rxn, orange; 0.01 ng/rxn, green; 0.001 ng/rxn, blue). Mean Cq values across three different production lots along with standard deviations are presented (if SD>0.16).

Solis BioDyne

About Solis BioDyne

- Established in 1995
- Leading stable PCR reagent supplier
- Trusted trademark in 110+ countries
- Patents in EU, US and South Korea

Our expertise fields

- *In-silico* protein design
- Recombinant protein production in bacterial hosts
- Protein purification
- PCR/qPCR/RT-qPCR assay & product design
- Production of unique PCR/qPCR/RT-qPCR solutions

Commitment to quality

Quality has always been the core value of our work. To ensure we match the high- quality requirements of our partners in the research and diagnostic sector, we implemented and follow ISO standards.

- Proven lot-to-lot consistency and high quality
- Total control over manufacturing process
- Supply chain security and traceability
- Manufacturing process consistency

QUALITY SYSTEM CERTIFICATION DNV ISO 13485

QUALITY SYSTEM CERTIFICATION DNV ISO 9001

Reagents supplied:

- 4x SOLIScript® Fast 1-step RT-qPCR Mix with UNG
- Water, nuclease free

Ordering information

Product	CAT. NO.	Size (20 µl rxn)
SOLIScript® Fast 1-step RT-qPCR Mix with UNG	08-87-0000S (sample) 08-87-00200 08-87-00200-5 08-87-05000	50 rxn 200 rxn 5x 200 rxn 5000 rxn

FL-08-87-V2

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For further details and ordering please contact **info@solisbiodyne.com** or call **+372 740 9960**

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