SARS-CoV-2 RNA stability in saliva and dry swabs for storage and transport at ambient temperature for at least 9 days: A cost efficient and practical alternative

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Abstract

During the current COVID-19 pandemic, different methods have been used to evaluate patients suspected with infection of SARS-CoV-2. In this study, we evaluate the longevity of saliva and dry swab samples to retain SARS-CoV-2 for storage and transport at different environmental settings. Our results show that at ambient temperature of 20°C, SARS-CoV-2 RNA remains stable for up to 9 days giving a long span of time for transport and storage without compromising clinical results. Additionally, this study demonstrates that saliva and dry swabs specimens can also be stored at -20°C and +4°C for up to 26 days without affecting RT-qPCR results. Our data is relevant for low-and middle-income countries, which have limited access to rapid refrigerated transport and storage of samples representing an economical alternative. Finally, our study demonstrates that dry swabs provide clear advantages over using transport medium.

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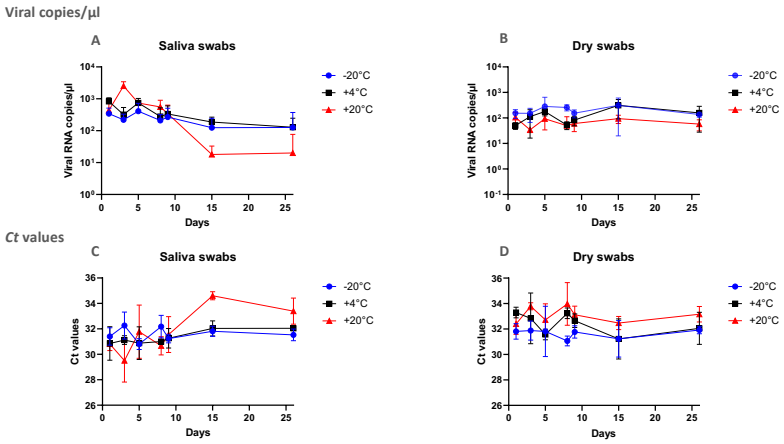

SARS-CoV-2 in saliva medium							
	Mean CT (SD) on day:						
	1	3	5	8	9	15	26
-20°C	31,4 (0,7)	32,3 (1,1)	30,8 (0,4)	32,2 (0,9)	31,6 (1,4)	31,8 (0,4)	31,5 (0,5)
4°C	30,9 (1,3)	31,1 (0,3)	30,9 (1,3)	31,0 (0,1)	31,2 (0,3)	32,0 (0,6)	32,0 (0,06)
20°C	30,8 (0,5)	29,5 (1,7)	31,8 (2,1)	30,7 (0,7)	31,3 (0,8)	34,6 (0,3)	33,4 (1,0)
	P values day:						
	1	3	5	8	9	15	26
-20°C vs. 4°C	0,76	0,32	1	0,38	0,91	0,96	0,79
-20°C vs. 20°C	0,73	0,003	0,43	0,14	0,93	0,003	0,05
4°C vs. 20°C	1,00	0,11	0,49	0,92	1,00	0,006	0,21
	P values day 1 vs day 9			P values day 1 vs day 26			
-20°C	1,00			1,00			
4°C	1,00			0,73			
20°C	1,00			0,03			

SARS-CoV-2 no medium dry swab							
	Mean CT (SD) on day:						
	1	3	5	8	9	15	26
-20°C	31,8 (0,6)	31,9 (0,8)	31,8 (2,0)	31,1 (0,4)	31,8 (0,48)	31,2 (1,4)	31,9 (0,3)
4°C	33,3 (0,4)	32,8 (2,0)	31,6 (0,4)	33,2 (0,4)	32,7 (0,5)	31,2 (1,6)	32,1 (1,3)
20°C	32,4 (0,8)	33,8 (0,3)	32,7 (1,3)	34,0 (1,7)	33,1 (0,7)	32,5 (0,5)	33,2 (0,6)
	P values day:						
	1	3	5	8	9	15	26
-20°C vs. 4°C	0,21	0,51	0,96	0,04	0,63	1,00	0,99
-20°C vs. 20°C	0,77	0,08	0,54	0,004	0,34	0,33	0,32
4°C vs. 20°C	0,55	0,51	0,38	0,67	0,85	0,32	0,41
	P values day 1 vs day 9			P values day 1 vs day 26			
-20°C	1,00			1,00			
4°C	0,99			0,77			
20°C	0,98			0,97			

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