

TITLE: Saliva-Dry LAMP: A rapid near-patient detection system for SARS-CoV-2.

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Supplementary Materials:

Table S1. Saliva-LAMP demonstrates no cross-reactivity with a panel of 11 respiratory pathogens

Pathogen	Strain	Concentration	Result	Agreement with Expected Results
<i>Staphylococcus aureus</i>	COL (MRSA)	10-fold dilution of stock that yields a Ct value of 18.5-21 by PCR	Negative	100% (1/1)
<i>Streptococcus pneumonia</i>	Z2022	10-fold dilution of stock that yields a Ct value of 26-28 by PCR	Negative	100% (1/1)
Influenza A H3	A/Brisbane/10/07	10-fold dilution of stock that yields a Ct value of 22-25 by RT-PCR	Negative	100% (1/1)
Influenza B	B/Florida/02/06	10-fold dilution of stock that yields a Ct value of 19-22 by RT-PCR	Negative	100% (1/1)
RSV A2	N/A	10-fold dilution of stock that yields a Ct value of 29-32 by RT-PCR	Negative	100% (1/1)
Coronavirus 229E	N/A	10-fold dilution of stock that yields a Ct value of 25-28 by RT-PCR	Negative	100% (1/1)
Coronavirus NL63	N/A	10-fold dilution of stock that yields a Ct value of 27-30 by RT-PCR	Negative	100% (1/1)
MERS	Florida/USA-2_Saudi_Arabia_2014	10-fold dilution of stock that yields a Ct value of 25-28 by RT-PCR	Negative	100% (1/1)
Coronavirus OC43	N/A	10-fold dilution of stock that yields a Ct value of 25-28 by RT-PCR	Negative	100% (1/1)
SARS	2003-00592	10-fold dilution of stock that yields a Ct value of 25-28 by RT-PCR	Negative	100% (1/1)
Coronavirus HKU1	N/A	10-fold dilution of stock that yields a Ct value of 22-25 by RT-PCR	Negative	100% (1/1)
Positive Control (SARS-CoV-2, MS2)		10 X LOD	Positive	100% (1/1)
Negative Control		-	Negative	100% (1/1)

Table S2. Saliva-LAMP is impervious to a wide variety of household medications and substances that may be in patient samples.

†Samples were prepared to 9 X LOD before they underwent an additional freeze-thaw step, further reducing the viral titre by an unknown factor

Substance/Trade Name	Active Ingredient	Ingredient Concentration in Spiked Saliva-UTM Sample	Viral Titre in Input Saliva-UTM Sample†	% Agreement with Expected Results
Tylenol Extra Strength	Acetaminophen	Approximately 1.7 mg/mL	9 X LOD	100% (1/1)
			NTC	100% (1/1)
Aspirin Extra Strength	Acetylsalicylic Acid	Approximately 12.3 mg/mL	9 X LOD	100% (1/1)
			NTC	100% (1/1)
Colgate Total Mouthwash	Cetylpyridinium Chloride	0.005% (w/w)	9 X LOD	100% (1/1)
			NTC	100% (1/1)
Cepacol® Sore Throat Lozenges	Benzocaine and Menthol	Approximately 0.08 mg/mL benzocaine and 0.02 mg/mL menthol	9 X LOD	100% (1/1)
			NTC	100% (1/1)
Chloraseptic® Sore Throat Spray	Phenol	0.07% (w/v)	9 X LOD	100% (1/1)
			NTC	100% (1/1)
Dristan Tablets	Chlorpheniramine Maleate, Acetaminophen, Phenylephrine HCl	Approximately 0.06 mg/mL (Chlorpheniramine maleate), Approximately 6.5 mg/mL (Acetaminophen), Approximately 0.1 mg/mL (Phenylephrine HCl)	9 X LOD	100% (1/1)
			NTC	100% (1/1)
Dimetapp	Bromopheniramine Maleate, Phenylephrine HCl	0.064 mg/mL (Bromopheniramine Maleate), 0.16 mg/mL (Phenylephrine HCl)	9 X LOD	100% (1/1)
			NTC	100% (1/1)
Colgate Triple Action Fluoride Toothpaste	Sodium fluoride	Approximately 0.075% (w/w)	9 X LOD	100% (1/1)
			NTC	100% (1/1)
Benadryl Extra Strength	Diphenhydramine HCl	Approximately 2.7 mg/mL	9 X LOD	100% (1/1)
			NTC	100% (1/1)

HALLS® Kids Sore Throat Lozenges Strawberry Flavoured	Menthol	Approximately 0.08 mg/mL	9 X LOD	100% (1/1)
			NTC	100% (1/1)
Extra Strength Ibuprofen Liquid Gel Capsules	Ibuprofen	Approximately 6 mg/mL	9 X LOD	100% (1/1)
			NTC	100% (1/1)
Listerine Freshburst	Menthol, Thymol, and Eucalyptol	0.0042% (w/v) menthol%, 0.0063 (w/v) thymol, 0.0091% (w/v) eucalyptol	9 X LOD	100% (1/1)
			NTC	100% (1/1)
Rub A535	Methyl Salicylate, Eucalyptus Essential Oil	0.0060% (w/w) (Methyl Salicylate), 0.0006% (w/w) (Eucalyptus Essential Oil)	9 X LOD	100% (1/1)
			NTC	100% (1/1)
Benylin Extra Strength Dry Cough	Dextromethorphan HBr	0.2 mg/mL	9 X LOD	100% (1/1)
			NTC	100% (1/1)
Robitussin Cough & Cold Extra Strength	Dextromethorphan HBr, Guaifenesin, Pseudoephedrine Hydrochloride	0.2 mg/mL (Dextromethorphan Hydrobromide), 2.67 mg/mL (Guaifenesin), 0.4 mg/mL (Pseudoephedrine Hydrochloride)	9 X LOD	100% (1/1)
			NTC	100% (1/1)
Robitussin Mucus and Phlegm	Guaifenesin	2.0 mg/mL	9 X LOD	100% (1/1)
			NTC	100% (1/1)
Jamieson Extra Strength Zinc Supplement (50 mg)	Zinc Gluconate	Approximately 1 mg/mL	9 X LOD	100% (1/1)
			NTC	100% (1/1)
Human Blood	N/A	10% (v/v)	9 X LOD	100% (1/1)
			NTC	100% (1/1)
No Interfering Substances	N/A	N/A	9 X LOD	100% (1/1)
			NTC	100% (1/1)

Table S3. Assessment of precision of saliva-LAMP using five samples on three sets of instruments each day for five days (3 X 5 X 5).

Table S4. Assessment of precision of saliva-LAMP using two samples twice per day for twenty days (20 X 2 X 2).

		Negative Control	Positive Control	Replicate 1 (10 copy/µL)	Replicate 2 (10 copy/µL)
Day 1	Round 1	Negative	Positive	Positive	Positive
	Round 2	Negative	Positive	Positive	Positive
Day 2	Round 1	Negative	Positive	Positive	Positive
	Round 2	Negative	Positive	Positive	Positive
Day 3	Round 1	Negative	Positive	Positive	Positive
	Round 2	Negative	Positive	Positive	Positive
Day 4	Round 1	Negative	Positive	Positive	Positive
	Round 2	Negative	Positive	Positive	Positive
Day 5	Round 1	Negative	Positive	Positive	Positive
	Round 2	Negative	Positive	Positive	Positive
Day 6	Round 1	Negative	Positive	Positive	Positive
	Round 2	Negative	Positive	Positive	Positive
Day 7	Round 1	Negative	Positive	Positive	Positive
	Round 2	Negative	Positive	Positive	Positive
Day 8	Round 1	Negative	Positive	Positive	Positive
	Round 2	Negative	Positive	Positive	Positive
Day 9	Round 1	Negative	Positive	Positive	Positive
	Round 2	Negative	Positive	Positive	Positive
Day 10	Round 1	Negative	Positive	Positive	Positive
	Round 2	Negative	Positive	Positive	Positive
Day 11	Round 1	Negative	Positive	Positive	Positive
	Round 2	Negative	Positive	Positive	Positive
Day 12	Round 1	Negative	Positive	Positive	Positive
	Round 2	Negative	Positive	Positive	Positive
Day 13	Round 1	Negative	Positive	Positive	Positive
	Round 2	Negative	Positive	Positive	Positive
Day 14	Round 1	Negative	Positive	Positive	Positive
	Round 2	Negative	Positive	Positive	Positive
Day 15	Round 1	Negative	Positive	Positive	Positive
	Round 2	Negative	Positive	Positive	Positive
Day 16	Round 1	Negative	Positive	Positive	Positive

	Round 2	Negative	Positive	Positive	Positive
Day 17	Round 1	Negative	Positive	Positive	Positive
	Round 2	Negative	Positive	Positive	Positive
Day 18	Round 1	Negative	Positive	Positive	Positive
	Round 2	Negative	Positive	Positive	Positive
Day 19	Round 1	Negative	Positive	Positive	Positive
	Round 2	Negative	Positive	Positive	Positive
Day 20	Round 1	Negative	Positive	Positive	Positive
	Round 2	Negative	Positive	Positive	Positive

Table S5. Capital cost of Saliva-dry LAMP commercially acquired instrument.

Instrument	Cost Per Unit (CAD)
mySPIN™ 12 Mini Centrifuge	\$1582.20 [36]
IncuBlock™ Mini Dry Bath	\$252.00 [37]
2 X Aluminum blocks (for 0.2 mL and 2 mL tubes)	\$174 [37]
Ultra Slim LED Transilluminator	\$526.75 [38]
Total Capital Cost	\$2534.95 (US\$1977.44, Dec 8, 2020 exchange rate)

Table S6. Capital cost of Saliva-dry LAMP Biobox (major items listed)

Instrument	Cost Per Unit (CAD)
Fan	\$56.19
Cable	\$46.38
Heat block & machining	\$130.29
Motor	\$38.43
Other	\$224.46
Total Capital Cost	\$495.75 (US\$386.72, Dec 8, 2020 exchange rate)

Figure S1. Cycle threshold (Ct) values based on reference RT-PCR methods of the concomitant NP swab for all SARS-CoV-2-positive saliva samples used in the clinical validation (n=30).

