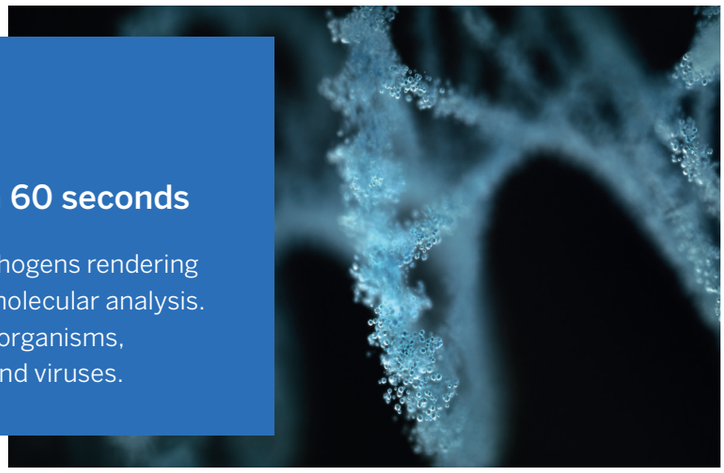
mwe
MEDICAL WIRE



∑-MM™

Inactivates SARS-CoV-2 in 60 seconds

Inactivation of highly infectious pathogens rendering specimens safe for transport and molecular analysis. ∑–MM™ solution rapidly kills microorganisms, including bacteria, mycobacteria, and viruses.

∑–MM™ inactivation media was developed to safely inactivate bacteria and viruses and preserve and stabilize the released RNA/DNA for molecular testing and analysis, working accurately across diagnostic platforms.

∑–MM™ contains a powerful reagent-based medium which kills pathogens immediately while retaining DNA and RNA intact, ready for analysis. The medium disturbs and lyses lipid membranes, destroys proteins including DNase and RNase, leaving stable intact DNA or RNA. Specimens collected into ∑–MM™ can be transported at ambient temperatures. No freezing or refrigeration is required. Specimens can be collected using any microbiology swabs, including MWE Transwab®, Dryswab™ and Sigma range of products.

The ∑–MM™ device is a highly effective single step collection, storage and transport system for specimens where there is a high risk of dangerous pathogens. Microorganisms such as bacteria, including mycobacteria, and viruses are killed within seconds, while DNA and RNA is maintained intact. This format is suitable for local & long distance transportation, including international, where samples may need to be sent to National or Regional Refeberence Laboratories. Effective rapid killing has been demonstrated for bacteria, including *Staphylococcus aureus, Escherichia coli, Haemophilus influenzae,* and *Streptococcus pneumoniae,* and viruses including Influenza A and Influenza B.

∑–MM™ medium is supplied in ready to use tubes, and is stored at ambient temperatures.

The product is fully compatible with Roche Liat POC® and GeneXpert PCR® diagnostic systems amongst others, with no interference to the chemistry and is widely used across the UK and other countries.

FEATURES

- ∑-MM™ solution rapidly kills microorganisms, including bacteria, mycobacteria, and viruses
- Suitable for highly infectious clinical specimens
- DNases and RNases immediately inactivated
- DNA and RNA preserved for molecular testing
- Can be used with any swab or liquid specimen

BENEFITS

- **Powerful reagents kill deadly pathogens immediately**
- **Safe and stable for transport at ambient temperatures**
- **Nucleases inactivated**
- **Suitable for all microorganisms**
- **Effective for viruses, including Coronavirus**
- **Effective for bacteria including mycobacteria**

∑-MM™ has been validated both internally and by professional bodies. Many Gram-positive and Gram-negative bacteria including *Staphylococcus aureus, Streptococcus agalactiae, Escherichia coli, Candida albicans, Pseudomonas aeruginosa* and *Salmonella typhimurium* were rendered inactive/killed within 5-10 seconds.

Public Health England (UK) has confirmed that ∑-MM™ provides effective inactivation of SARS-CoV-2 and the Luton and Dunstable University Hospital proved that ∑-MM™ was also completely effective at killing MRSA and CRE at all concentrations tested.

STUDY

∑-MM™

Evaluation of the new Molecular Transport Medium (∑-MM™) for the inactivation of bacterial pathogens and release of the intact DNA.

Monika Stuczen & Jamie Laughlin. Medical Wire, Corsham, England & South West London Pathology, Microbiology, St George's University Hospitals NHS Foundation Trust, London, England.

AIMS

The aim of this study was to evaluate the ability of the medium to inactivate bacteria including mycobacteria within 30 seconds, 1, 2 and 5 minutes, and release intact DNA. The ability of the medium to preserve intact DNA over 42 days was also assessed and tested using GeneXpert.

METHODS

For *Mycobacterium tuberculosis* (TB) 15 known positive samples were transferred to culture bottles (5 after 1 min, 5 after 2 minutes and 5 after 5 minutes). They were put up on the Bactec MGIT 960 Mycobacterial Detection System and the presence of bacterial growth was observed over 42 days of incubation.

After 42 days, samples were tested for the presence of DNA using GeneXpert® MTB/RIF, Cepheid. For inactivation/killing properties of the ∑-MM™ 0.5 McFarland bacterial concentrations of each strain were prepared in sterile saline and inoculated onto the culture media as a positive control.

∑-MM™ in triplicate were inoculated with 100 µl of 0.5 McFarland concentration and vortexed for 5 seconds. After 30 seconds of incubation 100 µl of the media was inoculated onto the appropriate culture media. Plates were incubated at 37°C for the time required for each particular strain. After incubation plates were assessed for any growth of bacteria in the culture media.

RESULTS

∑-MM™ medium was effective in killing/inactivating all microorganisms tested after 30 seconds of incubation. There was no growth observed. All positive control plates had too numerous to count bacterial growth.

For TB a single sample of a known TB positive sample after deactivation in ∑-MM™ suspension came up positive after 15 days on the MGIT liquid culture system. Other than this one sample all other known TB samples were deactivated by the new medium. DNA was successfully detected using GeneXpert in all samples after 42 days of incubation and the smallest Ct difference between any pair of probes was less than 2 0.

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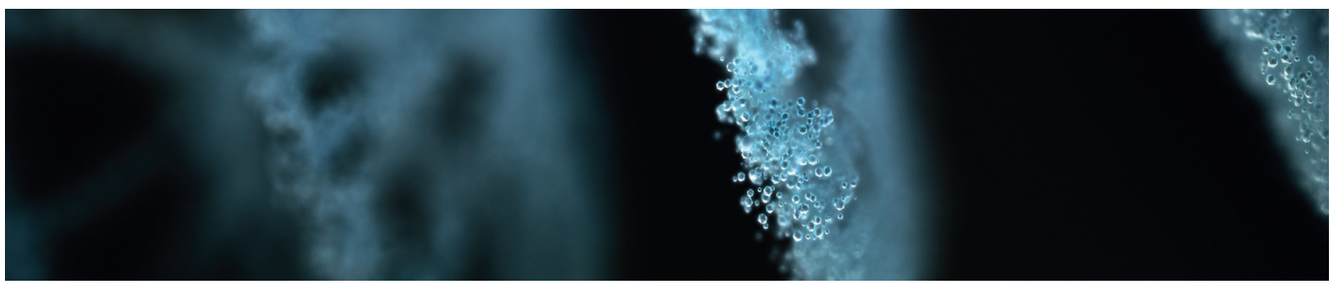
CONCLUSIONS

∑-MM™ transport medium rapidly kills bacteria and stabilizes and preserves released nucleic acids. Tested bacterial strains were inactivated within 30 seconds of inoculation. TB was killed after 1 minute and intact DNA was preserved after 42 days of incubation. ∑-MM™ makes the sample safe for transportation, shipment and processing at ambient temperatures and microbial DNA/RNA detectable using molecular methods. During pandemics and epidemics specific and effective molecular detection is a crucial part of microbial identification and epidemiological surveillance. Transport systems that maintain viability of pathogens may increase infectious disease risk and RNA/DNA degradation. ∑-MM™ is a new molecular transport medium which is specifically designed to preserve nucleic acids in order to process samples using molecular detection methods.

Sample Number	Incubation culture results after 42 days	GeneXpert results after 42 days incubation	CT Values				
			Probe A	Probe B	Probe C	Probe D	Probe E
1	negative	positive	16.8	18.3	17.2	18.4	18.6
2	negative	negative	0	0	0	0	0
3	negative	positive	15.7	17.4	16.2	17.3	16.9
4	negative	positive	15.5	16.2	16.9	17.2	17.1
5	negative	positive	18.4	19.6	18.9	19.9	19.7
6	negative	positive	15.2	16.1	16.5	17.1	17.0
7	negative	positive	15.4	17.4	16.2	17.3	16.9
8	negative	positive	18.4	19.3	18.7	19.9	19.7
9	negative	positive	15.5	16.2	16.9	17.2	17.1
10	negative	positive	18.6	19.8	18.5	19.9	19.1
11	negative	positive	15.9	17.1	16.1	17.8	16.5
12	negative	positive	14.8	16.9	15.8	17,2	16.3
13	negative	positive	15.1	16.4	16.5	17.0	17.1
14	positive	positive	16.5	16.2	16.3	16.9	16.9
15	negative	positive	18.6	19.9	18.7	19.9	19.5

List of Product Options (Variants)							
Code	EAN	Name	Cap Colour	Length	Quantity	Pack Size	Shelf Life
MWMM	05060259073038	∑-MM™ Molecular Medium with No Swab	White	-	1	50	1 Year



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