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For research use only

MRS/MRSA Multiplex REAL-TIME PCR Detection Kit

REF **R1-P022-23/4EU**
R1-P022-S3/4EU

General information

Intended use:
MRS/MRSA Multiplex REAL-TIME PCR Detection Kit is intended for detection of *Staphylococcus* DNA and identification of *mec A* gene which is responsible for methicillin resistance.
MRS/MRSA Multiplex REAL-TIME PCR Detection Kit can be used in scientific research practice.

Method:
Multiplex Real-Time PCR, qualitative and quantitative analysis.

Samples:
Urina; phlegm; breast milk; cerebrospinal fluid; epithelial cell swabs from urethra, cervical canal, posterior vaginal vault; oropharyngeal and nasal smears and washings; tracheae aspirate; faeces; swipes and washings from wound surface.

DNA extraction:
The DNA-Technology's **PREP-RAPID** (not applicable to male urethral swabs), **PREP-GS** and **PREP-NA** extraction kits are recommended.

Features:
Multiplex analysis gives the opportunity of several DNA targets detection in the same tube.

PCR-mix contains an internal control (IC). IC is intended for PCR quality assurance.

We also recommend including in assay the negative control (C-) which is not supplied but very helpful for contamination control purposes. Use deionized water or sterile buffered saline instead of sample, starting from extraction step.

Devices:
The automatic analysis for **MRS/MRSA Multiplex REAL-TIME PCR Detection Kit** is available on "DNA-Technology" made DTlite[1], and DTprime[2] REAL-TIME Thermal Cyclers; the latest version of the software is available for download at https://www.dna-technology.com/software.

Time of analysis (excluding sample preparation procedure):
from 1.5 hours.

The number of tests:
48 (including one positive control and one negative control in each run).

Kit contents:

Reagent	Organoleptic parameters	Quantity	
1. Paraffin sealed PCR-mix	Colorless transparent liquid under white wax layer	20 µL in each	6 8-tubes strips or 48 tubes
2. Taq-polymerase solution	Colorless transparent liquid	500 µL	1 tube
3. Mineral oil	Colorless transparent viscous oily liquid	1.0 mL	1 tube
4. Positive control	Colorless transparent liquid	75 µL	1 tube
Associated accessories:			
Strip's caps [3]			6 8-caps

Dye label detection channels

Fam	Hex	Rox	Cy5	Cy5.5
Staphylococcus aureus	IC	*mec A* gene	*Staphylococcus spp.*	-

[1] - supported by 4S1; 4S2; 5S1; 5S2; 6S1; 6S2 instruments.
[2] - supported by 4M1; 4M3; 4M6; 5M1; 5M3; 5M6; 6M1; 6M3; 6M6 instruments.

[3] - for detection kit packaged in strips REF R1-P022-S3/4EU.

Procedure

1 PCR amplification

The reagents and tubes should be kept away from direct sunlight!

Strictly observe the completeness of the strips and caps for them. Do not use the caps for the strips of the other kits!

1.1 Mark the required number of the tubes with paraffin sealed PCR-mix considering samples, negative control (C-) and positive control (C+).

Example: to test 2 samples, mark 2 tubes for samples, one for "C-", one for "C+". The resulting number of tubes is 4.

1.2 Vortex the Taq-polymerase solution thoroughly (3-5 s), then spin briefly (1-3 s).

1.3 Add 10 µL of Taq-polymerase solution into each tube. Avoid paraffin layer break.

1.4 Add one drop (~20 µL) of mineral oil into each tube. Close tubes/strips.

1.5 Vortex the tubes with samples, "C-" and "C+" for 3-5 s and spin down drops for 1-3 s.

1. In case of using **PREP-GS DNA Extraction Kit.** After vortexing centrifuge the tubes with the DNA preparation at RCF(g) 16000 for one minute at room temperature (from 18 °C to 25 °C) to precipitate the sorbent. If, after isolation, the supernatant containing the isolated DNA was transferred to new tubes, centrifugation is carried out for 1-3 s in a vortex mixer.
Relative centrifugal force (RCF or g) depends on rotation frequency and rotor radius (Annex A). To establish if your centrifuge meets the requirements apply to the exploitation manual for centrifuge.
2. Open the tube, add DNA sample (or control sample), then close the tube before proceeding to the next DNA sample to prevent contamination. In case of using tubes in strips, close the strip before proceeding to the next strip to prevent contamination. Use filter tips. Close tubes/strips tightly.

1.6 Add 5.0 µL of the DNA sample into corresponding PCR-tubes. Avoid paraffin layer break. Do not add DNA into the "C-", "C+" tubes.

1.7 Add 5.0 µL of negative control sample (C-), which passed whole DNA extraction procedure into corresponding tube. Add 5.0 µL of positive control sample (C+) into corresponding tube. Avoid paraffin layer break.

1.8 Spin tubes/strips for 1–3 s to collect drops.

1.9 Set the tubes/strips to real-time PCR thermal cycler.

1.10 Launch the operating software for DT instrument[1]. Add corresponding test[2], specify the number and ID's of the samples, positive and negative control samples. Specify the position of the tubes/strips in the thermal unit (see 1.9) and run PCR.

2 Data collection and data analysis

Registration of the PCR results is held in automatic mode. PCR results interpretation should be carried out in accordance with Table 1.

Storage, shipping and handling requirements

MRS/MRSA Multiplex REAL-TIME PCR Detection Kit should be stored at the temperatures from 2 °C to 8 °C during the storage period.

Paraffin-sealed PCR-mix should be stored in a dark place at the temperatures from 2 °C to 8 °C during the storage period.

The kit has to be transported in thermoboxes with ice packs by all types of roofed transport at temperatures from 2 °C to 25 °C but no more than 5 days and should be stored at temperatures from 2 °C to 8 °C immediately on receipt.

Shelf-life – 12 months if all the conditions of transportation, storage and operation are met.

Contact our customer service department regarding quality issues with the kit:
8 800 200-75-15 (toll-free call for Russia)
+7 (495) 640-16-93 (chargeable call for CIS and foreign countries)
E-mail: hotline@dna-technology.ru, https://www.dna-technology.com
Address: "DNA-Technology" LLC, 117587, Russia, Moscow, int. ter. Municipal District Chertanovo Severnoye, Varshavskoye shosse, 125 Zh, building 5, floor 1, office 12.

Key to symbols

	Temperature limit		Consult instructions for use		Catalogue number
	Use-by date		Manufacturer		Batch code
	Date of manufacture		Contains sufficient for <n> tests		Keep away from sunlight
	Caution		Non-sterile		Do not reuse

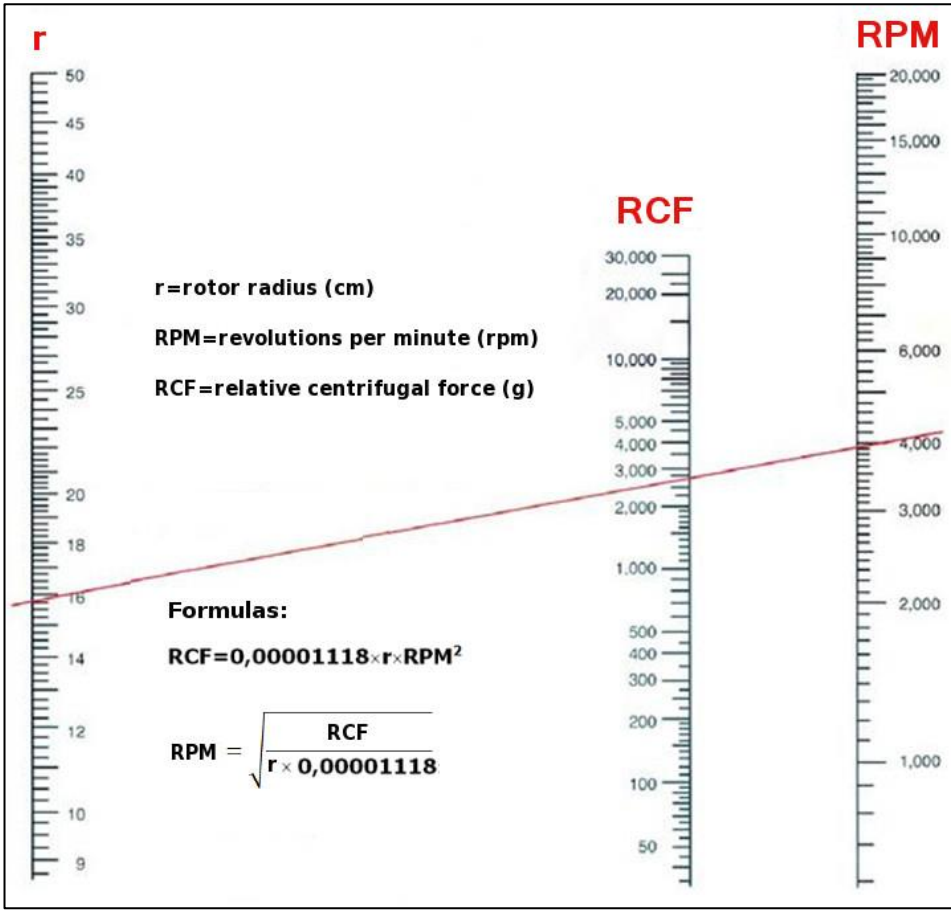
[1] Please, apply to Operation Manual for DTprime and DTlite Real-Time PCR instruments PART II.
[2] Instructions for uploading "files with test parameters" can be found on "DNA-Technology's" website https://www.dna-technology.com/assaylibrary.

Table 1. Results interpretations

Detection channel				Result	Interpretation	Comment
Fam	Hex	Rox	Cy5			
Lg values for the analyzed samples						
Is not defined	Is defined	Is not defined	Is not defined	-	DNA of *Staphylococcus* and *mec* A gene are not detected	-
Is not defined	Is not considered	Is defined	Is defined	+	DNA of methicillin-resistant *Staphylococcus non-aureus spp* and DNA of *mec* A gene are detected (**MRS -** methicillin-resistant *Staphylococcus spp*.)	The difference between lg values for Rox and Cy5 dyes ≤ 0.5 for monoinfection, if the difference >0.5 the mixed infection is possible.
Is defined	Is not considered	Is not defined	Is defined	+	DNA of *Staphylococcus aureus* is detected, DNA of *mec* A gene is not detected (**MSSA**: methicillin-sensitive *S.aureus*)	The difference between lg values for Fam and Cy5 dyes ≤ 0.5 for monoinfection, if the difference >0.5 the mixed infection is possible.
Is defined	Is not considered	Is defined	Is defined	+	DNA of *Staphylococcus aureus* and DNA of *mec* A gene are detected (**MRSA:** methicillin-resistant *S.aureus*, or mixture of **MSSA:MRS)**	The difference between lg values for Fam, Rox and Cy5 dyes ≤ 0.5 for monoinfection, if the difference >0.5 the mixed infection is possible.
Is not defined	Is not considered	Is not defined	Is defined	+	DNA of *Staphylococcus* non-*aureus spp* is detected, DNA of *mec* A gene is not detected (**MSS**: methicillin-sensitive *Staphylococcus* non-*aureus spp)*	-
Is not defined	Is not defined	Is not defined	Is not defined	n/a	Unreliable result	Repeating of PCR or DNA extraction with PCR for the given sample is required. Is performed sequantially.
Is defined	Is not considered	Is not considered	Is not defined	n/a	Unreliable result	Positive Fam result must always be accompanied by positive Cy5 result. Repeating of PCR or DNA extraction with PCR for the given sample is required. Is performed sequantially.
Lg values for the positive control sample						
Is defined	Is not considered	Is defined	Is defined	+	Positive result The results are valid	
Lg values for the negative control sample						
Is not defined	Is defined	Is not defined	Is not defined	-	Negative result The results are valid	

Annex A

Nomogram and formula for calculation of relative centrifugal force (RCF) in the speed of rotation (RPM) depending of the rotor diameter



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