

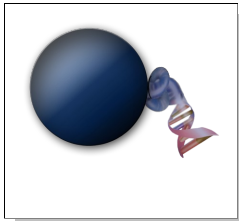


Compatibility of MagSi-DNA beads with Roche nucleotide extraction kit buffers

MagnaMedics Diagnostics B.V. (MMD) has tested its MagSi-DNA silica beads in a compatibility study using the buffers of Roche LC Nucleic Acid Isolation kits. Background of this study is the fact that clients have adopted diagnostic protocols which resulted in left over Roche buffers from these kits that. This created the opportunity for MagnaMedics Diagnostics and its partners (here: Academic Hospital Maastricht (AZM)) to investigate efficient integration of MagSi-DNA particles with these (left over) buffers.

Outcome of our study is that MagnaMedics MagSi-DNA beads are fully compatible with the original Roche beads and use of the MagSi-DNA beads with the leftover buffers will lead to significant cost savings for diagnostic clients.

Introduction



MagSi-DNA beads are magnetic silica beads with a dense core of iron oxide. These magnetic beads have a high magnetic content and their separation in a magnetic field is efficient (<10 sec). The MagSi-DNA beads are fully compatible with

the - in this study also used - Roche MagnaPure LC liquid handling system. MMD concludes that in all Roche MagNa Pure LC DNA Isolation kits, MagSi-DNA particles can replace the original Roche beads without negative impact.

Application 1:

Total genomic DNA (gDNA) isolation from whole blood using MagSi-DNA product and Roche buffers from the Roche MagNa Pure LC DNA Isolation kit III (Roche product no.: 03003990) and protocol.

Materials and Methods

100 µl whole blood samples were used per isolation. Roche MagNa Pure LC DNA Isolation kit III protocol was followed in all cases. Figure 1 represents agarose gel electrophoresis of the collected samples. The purity of the collected samples were analysed by UV/Vis for collection of the OD 260/280 ratios.

Results and Conclusions

The SDS-PAGE from Fig.1 demonstrates sufficient purity for all four bead types tested with the Roche buffers from Roche gDNA isolation Kit. However, highest DNA yields have been observed with the MagSi-DNA beads and the Roche magnetic particles supplied with the kit. The amount of the extracted DNA is the same range comparing MagSi-DNA beads with the Roche beads. The DNA purity expressed a A260/280 values were also in the same range (data not shown).

The MagSi-DNA beads mimic performance of Roche beads in terms of DNA yield and purity.

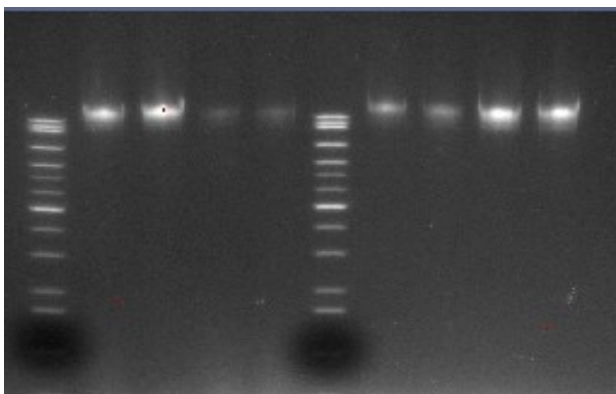


Figure 1: Agarose gel electrophoresis of isolated DNA. From left to right: Marker, 2x MagSi-DNA, 2xCompetitor A, Marker, 2x Competitor B, 2x Roche beads



Application 2:

Bacterial pathogen detection in whole blood using MagSi-DNA beads in Roche MagNA Pure LC (MPLC) microbiology kit MGrade buffers (Roche product no.: 03 264 785)

The MagNA Pure LC DNA Isolation Kit III (Bacteria, Fungi) is designed to isolate high-purity bacterial and fungal DNA from various diagnostic samples materials using the MagNA Pure LC Instrument. Purified DNA can be used directly for any downstream application (eg (RT)-PCR).

This comparative study uses Roche - and MagSi-DNA beads in the Roche MagNA Pure LC DNA Isolation kit III for the isolation of pathogenic DNA from methicillin resistant *Staphylococcus aureus* ssp.

Materials and Methods

Bacteria used were spiked into fresh whole blood. Isolation of DNA was performed in accordance to kit protocol. The

isolated DNA sample were used in a multiplex PCR assay targeting three *Staphylococcus aureus* genes, *mecA*, *femA*, and *sa442*.

Results and Conclusions

Table 1 represents observed Ct values. The Ct (cycle threshold) is defined as the number of cycles required for the fluorescent signal to cross the threshold (i.e. exceeds background level). Ct levels are inversely proportional to the amount of target nucleic acid in the sample.

Ct values show comparative results when using mentioned bead types in the protocol. The close Ct values comparing the results gained by Roche and MagnaMedics beads indicate that yield and purity of the extracted bacterial DNA are comparable using either the Roche or the MagnaMedics beads. This demonstrates that MagSi-DNA beads can be used with Roche buffers as supplied in the LC kits.

Bead type	<i>mecA</i>	<i>femA</i>	<i>sa442</i>	<i>mecA</i>	<i>femA</i>	<i>sa442</i>	<i>mecA</i>	<i>femA</i>	<i>sa442</i>	<i>mecA</i>	<i>femA</i>	<i>sa442</i>
Roche	22,33	26,70	22,22	25,77	30,09	25,87	29,30	33,54	29,49	33,01	36,96	33,46
MagSi-DNA	23,10	26,89	24,66	26,46	30,18	28,21	30,22	34,03	32,17	33,84	37,14	36,14
	10⁹ CFU/ml			10⁸ CFU/ml			10⁷ CFU/ml			10⁶ CFU/ml		

Table 1: Results of comparison of use beads in MagNA Pure LC DNA Isolation kit III setup

Order Information

Product	Volume	Product number
MagSi-DNA	2 ml	MD01017
MagSi-DNA	10 ml	MD02017
MagSi-DNA	100 ml	MD03017

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