The possibility of the designing test-systems for specific detection of corrosive-relevant sulfate-reducing bacteria using real-time PCR assay were investigated. This method of the
bacteria identification is based on the detection of the functional genes, encoding key enzymes of dissimilatory sulfate-reduction pathway, i.e. dissimilatory sulfite reductase α subunit \textit{dsrA}. It was established among the six test-systems specificity reveal only three designed on the base of \textit{Desulfotomaculum, Desulfovibrio, Desulfobulbus} genera sequences. The most corrosive-relevant strain \textit{Desulfovibrio} sp. UCM B-11503 \textit{dsrA} gene detected more effectively (threshold cycle was 20.0), than less corrosive-relevant strains \textit{Desulfovibrio} sp. UCM B-11504 (threshold cycle was 28.1) and for \textit{Desulfotomaculum} sp. UCM B-11505 and \textit{Desulfomicrobium} sp. UCM B-11506 were 24.9 and 23.1 cycles, respectively. Test-systems allowed identifying corrosive-relevant sulfate-reducing bacteria faster and more effective. This approach will serve as a base for monitoring of these bacteria for estimating corrosion sites on the high-level dangerous man-caused objects.

\textbf{Key words}: sulfate-reducing bacteria, dissimilatory sulfate-reduction genes, test-systems, real-time PCR.

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