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DETECTION OF CAUSATIVE AGENT OF ANTHRAX BY REAL-TIME POLYMERASE CHAIN REACTION

O. Yu. Limanskaya, L. A. Murtazaeva, S. Klee, A. P. Limanskii

Mechnikov Institute of Microbiology and Immunology of National Academy of Medical Sciences of Ukraine, Kharkiv

National Scientific Center «Institute of Experimental and Clinical Veterinary Medicine»
of National Academy of Agrarian Sciences of Ukraine, Kharkiv

Robert Koch-Institut, Berlin, Germany

Correct identification of *Bacillus anthracis bacilli* remains a challenge for differentiation of the anthrax infectious agent from closely related species B.
sereus
and B.
thuringiensis
because of a high homology level of nucleotide sequences with the Bacillus
cereus
sensu lato instances. In this paper, we have developed molecular genetic sets of primers and probes for real-time polymerase chain reaction with hybridization-fluorescence detection for differentiation of B.
anthracis
bacilli from B.
sereus
and B.
thuringiensis
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Fragment of ssp gene of chromosomal DNA characterized by hexanucleotide insertion only for B. *anthracis* isolates was determined as final target for primers and probes. Applying of TaqMan and molecular beacon probes enabled reliable discrimination between B. *anthracis* bacteria and closely related species B.
sereus
and B.
thuringiensis
by real-time polymerase chain reaction. The fluorescence signal for hairpin probes with a molecular beacon format was positive only for B. anthracis strains but for closely related B.
sereus
and B.

thuringiensis
species it was negative. Using line TaqMan probes, we registered high-intensity fluorescent signal for all B.
anthracis
isolates and a signal for B.
sereus
and B.
thuringiensis
was much low intensity. The developed approaches could be useful for clinical, epidemiological and epizootiological studies.

Key words: anthrax causative agent, *Bacillus anthracis*, real-time polymerase chain reaction.