New Reagents for the Identification and Quantification of Most Pneumococcal Serotypes/Serogroups via Quantitative PCR

Published date: Jan. 7, 2015

Technology description

Market Summary

Streptococcus pneumoniae infections (Sp) globally infect over 15 million annually, and are responsible for almost 1 million deaths in children. In the US, less serious Sp infections result in ear infections (6 million), pneumonia (0.5 million), bacteremia (50 thousand), and meningitis (3 thousand) annually. Currently, vaccinations are being recommended and routinized for preventing Sp infection, however these available vaccines only target about 20 of the 93 known serotypes of Sp. Additionally, research shows that over 50% of samples from Sp infections contain a minimum of 5 different Sp strains, with one dominant strain making up the majority of the pneumococcal load. The current technology for identifying Sp strains involves a multitude of reagents and techniques, but they are unable to resolve between highly similar strains. Therefore, new tools are required in order to identify what subtypes are found within Sp biofilms and infections.

Technical Summary

Streptococcus pneumonia (Sp) is a Gram-positive aerobic bacterium found in the nasopharynx of healthy carriers and known as a significant human pathogenic bacterium and a major cause of pneumonia. In susceptible individuals, the bacterium may become pathogenic and spread to other locations in the body and lead to disease. Emory researchers have created a set of probes and primers that can be used to identify and quantify the presence of 72 different Sp subtypes (including those covered by current vaccines) from patient samples using quantitative PCR (qPCR). These probes/primers have been shown to be target specific and sufficiently sensitive to identify levels as small as two genome equivalents per reaction and identify strains making up as little as 0.01% of the overall bacterial population. Additionally, the probes/primers have been shown to be cryostable over a 2-year period, allowing for reaction mixtures for strain identification to be premixed, frozen, and shipped to various sites for epidemiological studies and diagnosis.

Application area

Primers and probes set for identifying and quantifying of individual Streptococcus pneumoniae (Sp) serotype/serogroup within a sample.

Advantages

Can identify and quantify 72 different Sp subtypes.
Cryostable over a 2 year period.
Sufficiently sensitive to identify very small copy numbers within a sample & to differentiate highly similar strains within a serogroup.

Institution

Emory University

Inventors

Jorge Vidal
Associate Professor
Hubert Department of Global Health
Fuminori Sakai
Postdoctoral Fellow
SPH: Global Health

联系我们

叶先生

电 话：021-65679356
手 机：13414935137

邮 箱：yeyingsheng@zf-ym.com