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Quantitative fuculokinase gene polymerase chain reaction for specific detection of Haemophilus influenzae pneumonia

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Abstract

A quantitative polymerase chain reaction (PCR) for the fuculokinase gene (fucK) was developed for specific detection of Haemophilus influenzae. The method was tested on sputum and nasopharyngeal aspirate (NPA) from 78 patients with community-acquired pneumonia (CAP). With a reference standard of sputum culture and/or serology against the patient's own nasopharyngeal isolate, H. influenzae etiology was detected in 20 patients. Compared with the reference standard, fucK PCR (using the detection limit 105 DNA copies/mL) on sputum and NPA showed a sensitivity of 95.0% (19/20) in both cases, and specificities of 87.9% (51/58) and 89.5% (52/58), respectively. In a receiver operating characteristic curve analysis, sputum fucK PCR was found to be significantly superior to sputum P6 PCR for detection of H. influenzae CAP. NPA fucK PCR was positive in 3 of 54 adult controls without respiratory symptoms. In conclusion, quantitative fucK real-time PCR provides a sensitive and specific identification of H. influenzae in respiratory secretions.