Identification of a Novel Cephalosporinase (DHA-3) in Klebsiella pneumoniae Isolated in Taiwan

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摘要

Abstract

A strain of Klebsiella pneumoniae resistant to cefoxitin and oxyimino-cephalosporins, but susceptible to cefepime, was isolated from an adult patient hospitalised in Taichung, Taiwan. Isoelectric focusing revealed three β-lactamases with isoelectric points of 5.4, 8.2 and 7.9, respectively. Following PCR with plasmid DNA templates and gene sequencing, these enzymes were shown to correspond to TEM-1, SHV-5 and a novel DHA-1-like enzyme (designated DHA-3). The bla genes for TEM-1 and SHV-5 were transferable, but the blaDHA-3 gene was non-self-transferable in conjugation experiments. All three bla genes were successfully introduced by electrotransformation into an Escherichia coli recipient (DH5α), resulting in a similar resistance profile to that observed in the original donor strain. Other K. pneumoniae strains producing DHA-1-like enzymes have been identified previously in Taiwan, and this report suggests that DHA-type β-lactamases are continuing to emerge in this country.