Antibiotic resistance pattern of Klebsiella pneumoniae and Enterobacter sakazakii isolates from powdered infant formula

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The present study was conducted to evaluate the prevalence of antibiotic resistance in Enterobacter sakazakii and Klebsiella pneumoniae that caused powdered infant formula (PIF) contamination in Chinese market. All the isolates from PIF were analyzed for detecting resistance to antibiotics. 30 PIF samples were randomly purchased in Chinese market in 2009, and 7 E. sakazakii and 6 K. pneumoniae isolates were obtained from 8 samples (26.7%), the isolates were evaluated for antibiotics susceptibility by disk diffusion technique as recommended by the Clinical Laboratory Standards Institute (CLSI). Susceptibility results showed that each isolate had different levels of resistance to β-lactam antibiotics, while sensitive to Fluoroquinolones and Aminoglycosides. One K. pneumoniae and one E. sakazakii isolate almost resisted to all Cephalosporins chosen, the double-disk synergy test (DDST) showed these two isolates producing extended spectrum β-lactamase (ESBL). This is the first report of ESBL-producing in E. sakazakii from powdered infant formula in China.

Collectively, present findings revealed that resistance to antibiotics in E. sakazakii and K. pneumoniae continued to spread from clinical infections to food like PIF. Multi-drug resistant and ESBL-producing strains isolated from PIF are threatening infants all over the world, especially in the developing countries where antibiotics were extensively misused. How to prevent neonatal infections caused by E. sakazakii, K. pneumoniae and other Enterobacteriaceae from PIF should be our main target in the future.