The purpose of this study was to determine the stability of seven antipyocyanic beta-lactam antibiotics and cilastatin under real-life conditions” Curti et al (2019).

Abstract:

In intensive care, beta-lactams can be reconstituted in 50 mL polypropylene syringes with NaCl 0.9 % and administered for 8 to 12 h at various concentrations with motor-operated syringe pumps. The feasibility and/or the stability of these antibiotic therapies are often poorly known by clinicians. The purpose of this study was to determine the stability of seven antipyocyanic beta-lactam antibiotics and cilastatin under real-life conditions. Stability indicating HPLC methods allowing quantification in pharmaceutical preparations and subsequent stability studies were performed. The stability studies showed that continuous infusion of piperacillin/tazobactam 80/10 mg/mL, of cefepime 20 and 40 mg/mL and of aztreonam 40 and 120 mg/mL can be used over 12 h. Moreover, continuous infusion of cefepime 120 mg/mL can be used over 10 h, whereas meropenem 10 and 20 mg/mL and ceftazidime 40 mg/mL remained stable only over 8 h, and meropenem 40 mg/mL was significantly degraded after 6 h. Finally, imipenem/cilastatin 5/5 mg/mL and piperacillin/tazobactam 320/40 mg/mL should not be used as continuous infusion. These data allow the establishment of protocols of administration of antipyocyanic beta-lactams by continuous infusion. Some of them are not appropriate to this mode of administration (imipenem/cilastatin, piperacillin/ tazobactam 320/40 mg/mL) or must be avoided if possible (ceftazidime 40 mg/mL).

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