

However, the 24-h stability of antimicrobial agents dissolved in infusion solutions is unclear. Thus, we investigated the stability of antimicrobial agents in five different infusion solutions in a clinical setting” Nakamura et al (2018).

Abstract:

Some infectious diseases, such as infective endocarditis, osteomyelitis, and abscesses, require treatment with long-term intravenous antimicrobial treatment. Therefore, the patient is required to stay in the hospital to receive therapy, which lowers their quality of life. Establishing an outpatient parenteral antimicrobial therapy (OPAT) by continuous infusion pump is desired in Japan to overcome these issues. However, the 24-h stability of antimicrobial agents dissolved in infusion solutions is unclear. Thus, we investigated the stability of antimicrobial agents in five different infusion solutions in a clinical setting. Benzylpenicillin potassium (PCG) and ampicillin (ABPC) were dissolved separately in five different infusion solutions and kept at 25 or 31.1 °C for 24 h. The residual ratios were determined by high-performance liquid chromatography (HPLC). Dissolved PCG in acetate ringer solution remained stable for 24 h at temperatures of 25 and 31.1 °C ($101.7 \pm 1.4\%$ and $92.9 \pm 1.3\%$, respectively). In addition, the PCG solution did not adsorb onto the elastomeric infusion pump after 24 h at 31.1 °C. PCG dissolved in acetate ringer solution was also stable for 10 days after being kept in an elastomeric infusion pump at 4 °C ($99.7 \pm 0.5\%$). ABPC was unstable in all of the tested infusion solutions and temperatures. Based on our results, PCG in acetate ringer solution can be used in OPAT with continuous infusion pumps.

Reference:

Nakamura, T., Enoki, Y., Uno, S., Uwamino, Y., Iketani, O., Hasegawa, N. and Matsumoto, K. (2018) Stability of benzylpenicillin potassium and ampicillin in an elastomeric infusion pump. *Journal of Infection and Chemotherapy*. April 25th. .

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