

"Data obtained indicated co-amoxiclav stability superior to that previously proposed making it suitable for extended infusion therapy. The degradation of amoxicillin appeared to follow a linear trend, with the rate of degradation elevated at higher temperatures, demonstrated by the magnitude of the regression slopes in these conditions" Fawaz et al (2020).



Abstract:

RATIONALE: Previously, we have been able to outpace bacterial mutation by replacing increasingly ineffective antibiotics with new agents. However, with the discovery of new antibiotics diminishing, optimising the administration of existing broad-spectrum antibiotics such as co-amoxiclav has become a necessity. **METHODS:** A stability indicating HPLC method was developed and validated in compliance with International Council for Harmonisation (ICH) guidelines. Stability of co-amoxiclav at clinical concentration was evaluated at three temperatures (4°C, ambient (23-25°C) and 37°C) in three diluents (water for injection (WFI), 0.9% w/v NaCl and Ringer's solution). To establish whether there were significant differences at the level of both diluent and temperature, results were analysed using analysis of covariance (ANCOVA) to assess differences between the attained slopes of regression. **RESULTS:** Data obtained indicated co-amoxiclav stability superior to that previously proposed making it suitable for extended infusion therapy. The degradation of amoxicillin appeared to follow a linear trend, with the rate of degradation elevated at higher temperatures, demonstrated by the magnitude of the regression slopes in these conditions. Analysis of

regression slopes via ANCOVA demonstrated that diluent and temperature both significantly affected co-amoxiclav stability. Amoxicillin retained 90% of its initial concentration for 7.8 to 10 hrs when stored at 4°C, 5.9 to 8.8 hrs at ambient and 3.5 to 4.5 hrs when incubated at 37°C. CONCLUSION: Co-amoxiclav is suitable for administration via prolonged infusion.

Findings from this study aid in ameliorating current dosing regimens to optimise antibiotic efficacy. Other valuable applications conferred from these findings include the ability to pre-prepare solutions for use in bolus administration, minimising preparation time and workload.

Colistin methanesulfonate infusion solutions for home administration

Infusion-related events during natalizumab administration

Closed-loop documentation system for IV infusion administration

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Reference:

Fawaz, S., Dixon, B., Barton, S., Mohamed, A. and Nabhani-Gebara, S. (2020) Suitability of Amoxicillin-Clavulanic Acid for Administration via Prolonged Infusion. Drug Design, Development and Therapy. January 10th. doi: 10.2147/DDDT.S230459. eCollection 2020.

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