

Assessment of efficacy of post-infusion tubing rinsing in reducing cytotoxic contamination

Pauline Claraz¹, Isabelle Riff¹, Charlotte Vert¹, Isabelle Hennebelle², Sophie Perriat¹, Yann Cretu¹, Jean-Marie Canonge¹, Florent Puisset¹

1 : pharmacy department, Oncopole Toulouse France.

2 : risk management unit, Oncopole Toulouse France

Introduction and objective

Handling of cytotoxic is associated with occupational exposure of health care workers. Several guidelines have been published minimize this exposure. Since disconnection of infusion set is a source of contamination, rinsing tubing after infusion is recommended but the optimal volume of rinsing solution is uncertain.

Objective : to assess the volume of rinsing solution leading to a total elimination of cytotoxic concentration ([c]) after infusion.

Materials and methods

Cytarabine ← NaCl
D5
❖ LogP = -2,2

Gemcitabine ← NaCl
D5
❖ LogP = 0,76

Paclitaxel ← NaCl
D5
❖ LogP = 3,3

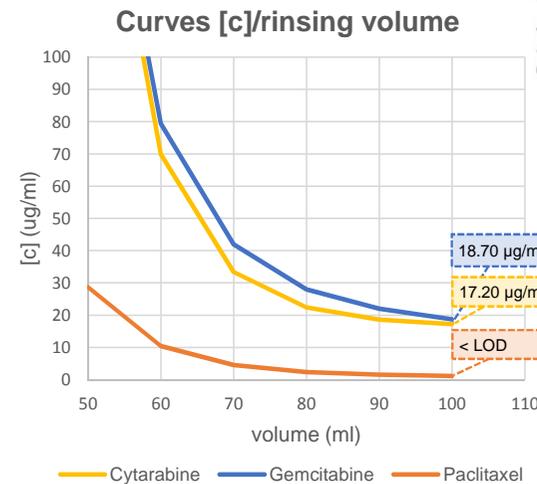


➤ Samples analysis UHPLC (validated new dosing method based on ICH guidelines)

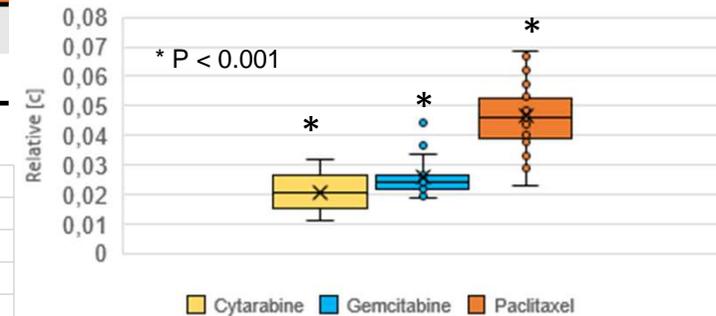


Results and discussion

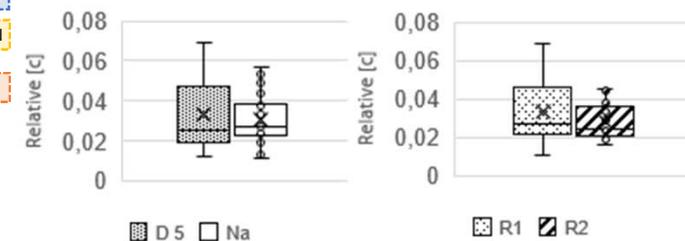
Drug	Cyta	Gemci	Pacli
LOD (µg/ml)	0.052	0.093	1.600
LOQ (µg/ml)	0.160	0.380	6.000



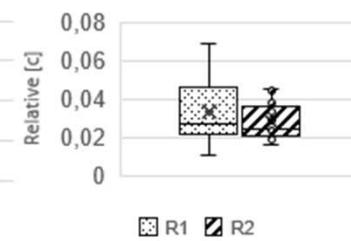
Molecule effect at 50 ml



Solvent effect 50 ml



Flow rate effect 50 ml



Discussion :

- Only paclitaxel was undetectable after rinsing, but LOD was higher.
- After a rinsing volume of three times of dead space volume of infusion set, levels of [c] of cytotoxic drugs are still relevant. The tubing must be considered as a source of contamination.
- Lipophilicity of the molecules seems to influence significantly rinsing efficiency

Conclusion

This study emphasizes the need of using closed transfer system device at the end of infusion line. Optimal rinsing volume should be considered as the volume that allows a maximal administered dose with a minimal residual concentration but not a totally cleaned infusion line.