Measure of chemical cross-contamination during the preparation of injectable cytotoxics

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BACKGROUND

The chemical contamination of injectable cytotoxics during their preparation is an issue for healthcare workers. Cross-contamination between consecutive preparations is poorly studied but can potentially impact on the patient.

MATERIAL & METHODS

Quinine dihydrochloride (QdHCl), analysed by spectrofluorimetry, was used as a tracer (LOQ : 0.25·10⁻⁷ M).

External contamination:
Content of each vial transferred with a needle in an infusion bag. Contaminated vials and non-contaminated vials were used.
• Cross-contamination: two successive preparations (n=10) performed: the first one with a contaminated (on the surface of the vials) and the second with a non-contaminated vial.
• Accumulation of the contamination: ten successive preparations with contaminated vials.
• Analyzed items: surface and content of bags and gloves.

Internal contamination:
Vials contained 200mg of QdHCl, reconstituted with 5mL of WFI.
• Cross-contamination: two successive preparations (n=10) performed: the first one with a contaminated and the second with a non-contaminated vial.
• Accumulation of the contamination: contents of 3 vials transferred in a bag (10x consecutively).
• Analyzed items: surface and content of bags and gloves.

RESULTS

External contamination:
• No transfer of contamination inside the second bags, but on the surface of the preparations bags without quinine (38 µg±31).
• The accumulation is only observed on the preparation gloves (193 µg).

Internal contamination:
• Absence of QdHCl on the surface of the final preparations and low rates on the gloves (26 µg±31).
• No accumulation observed on the bags, but on the preparation gloves (12 µg).

CONCLUSIONS

The cross contamination exists during the preparation of injectable cytotoxics, but without evidence of any transfer inside the second bags.

The accumulation on the preparation gloves demonstrates that the cleaning procedures must be improved.