

## Impact of syringes type on pH variation of drug solutions stored for intravenous continuous infusion

D. Palmero<sup>1,2</sup>, M. Berger-Gryllaki<sup>1</sup>, F. Sadeghipour<sup>1,2</sup>

<sup>1</sup>Department of Pharmacy, Lausanne University Hospital, <sup>2</sup>School of Pharmaceutical Sciences, University of Geneva, University of Lausanne, Switzerland.

### Background

In hospital, continuous intravenous drug administration to patients for 24 hours is common. In some wards, such as intensive care units, these infusions may be kept beyond 24 hours.

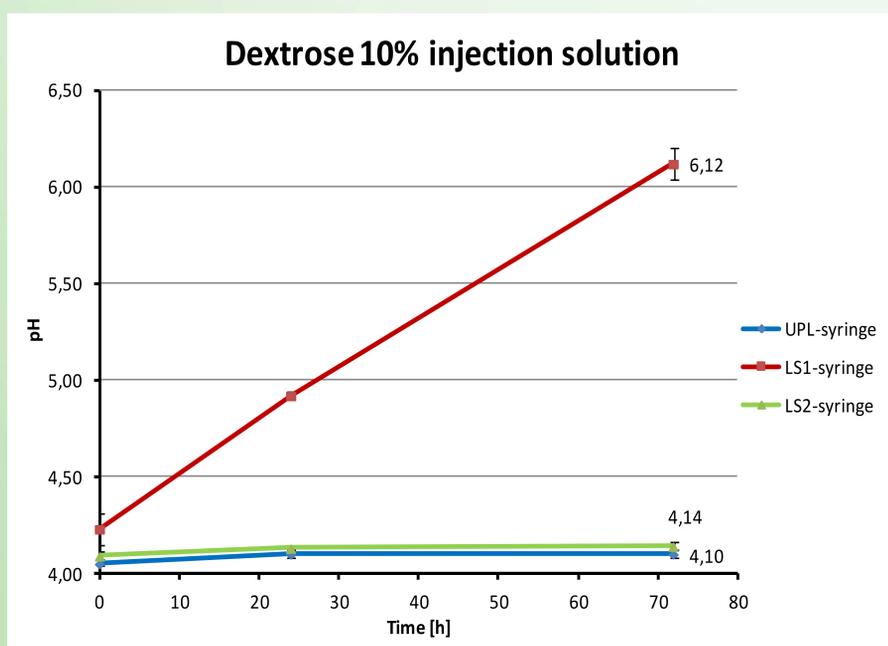
### Objectives

We aimed to assess pH variation of morphine 10 and 100 µg/ml in 10% dextrose solutions stored in three types of 50-ml polypropylene syringes for 72 hours

### Material and methods

3 solutions: A) 10 and B) 100 µg/ml morphine in water for injection and C) 10% dextrose were prepared and divided in triplicate in 2 types of syringes: 1) polypropylene syringes unprotected from light (UPL-syringe<sup>a</sup>), and 2) light-shielded polypropylene syringes (LS-syringes). LS-syringes provided by two different companies, Manufacturer-1 (LS1<sup>b</sup>) and Manufacturer-2 (LS2<sup>c</sup>). Syringes were stored in a climatic chamber (day-light, 30 ± 2°C, RH 65 ± 5%) over the full duration of the study. The pH of solutions in UPL-, LS1- and LS2-syringes was measured at T0, 24h and 72h. At each point time, the pH of each syringe was performed in triplicate.

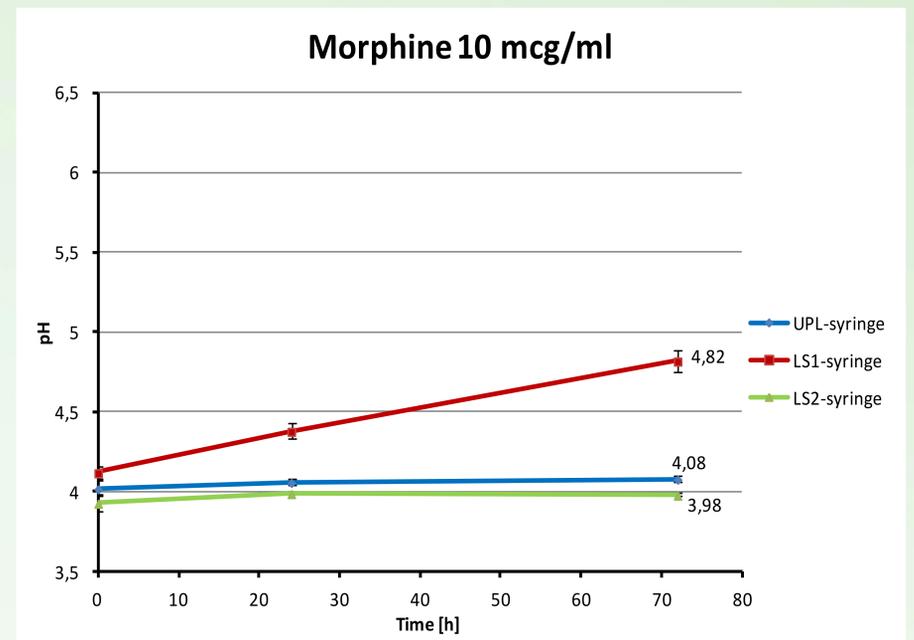
### Results



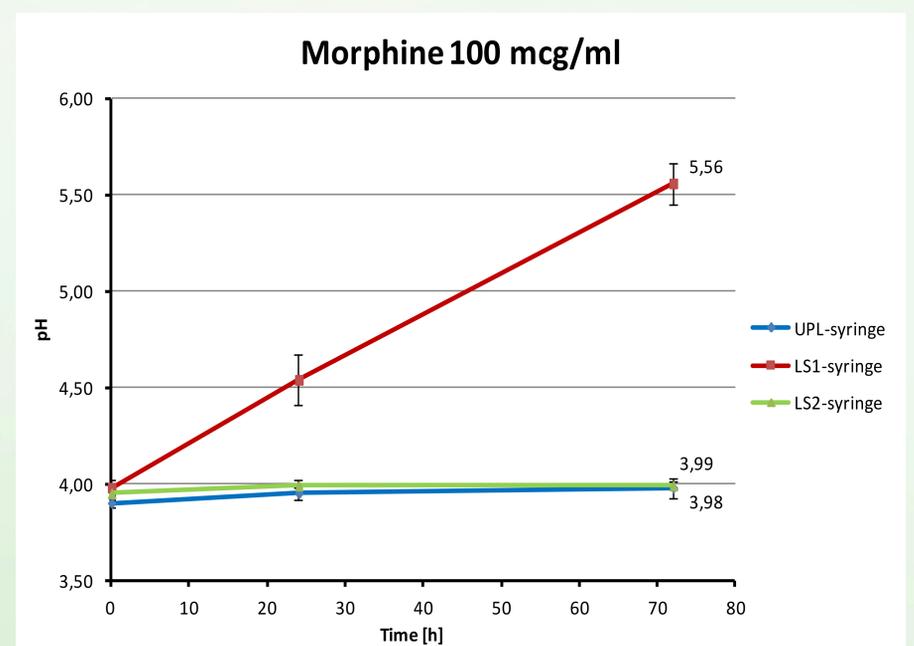
**Figure 1:** pH variation of dextrose 10% injection solution in UPL-, LS1- and LS2-syringes.

### Conclusions

The pH of identical drug solution varied differently depending on the type of syringe in which they are stored. This phenomenon could be a serious problem in unbuffered solutions of drugs which are stable only in a defined range of pH, administered in continuous during several days.



**Figure 2:** pH variation of morphine 10 µg/ml solution in UPL-, LS1- and LS2-syringes.



**Figure 3:** pH variation of morphine 100 µg/ml solution in UPL-, LS1- and LS2-syringes.

- <sup>a</sup>UPL-syringe: Omnifix® Luer Lock Solo 50 ml (reference 4617509F), B. Braun, lot 15C1882010.
- <sup>b</sup>LS1-syringe: BD™ Perfusion 50 ml (reference 300138), Becton Dickinson, lot 1301114.
- <sup>c</sup>LS2-syringe: Original Perfusor® 50 ml (reference 8728861F-06), B. Braun, lot 14G1882003.