STABILITY OF KETAMINE AND REMIFENTANIL HYDROCHLORIDE MIXTURE IN 0.9% SODIUM CHLORIDE IN POLYPROPYLENE SYRINGE DURING 24 HOURS

Poster E2

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OBJECTIVE

Intravenous admixture of ketamine and remifentanil in 0.9% sodium chloride syringe is used daily in one of our intensive care unit as a sedation protocol. The study aimed to determine if ketamine and remifentanil can be mixed for patients, in polypropylene syringes and retain their stability for up to 24 hours at 22°-24°C by using a high-performance liquid chromatography method (HPLC).

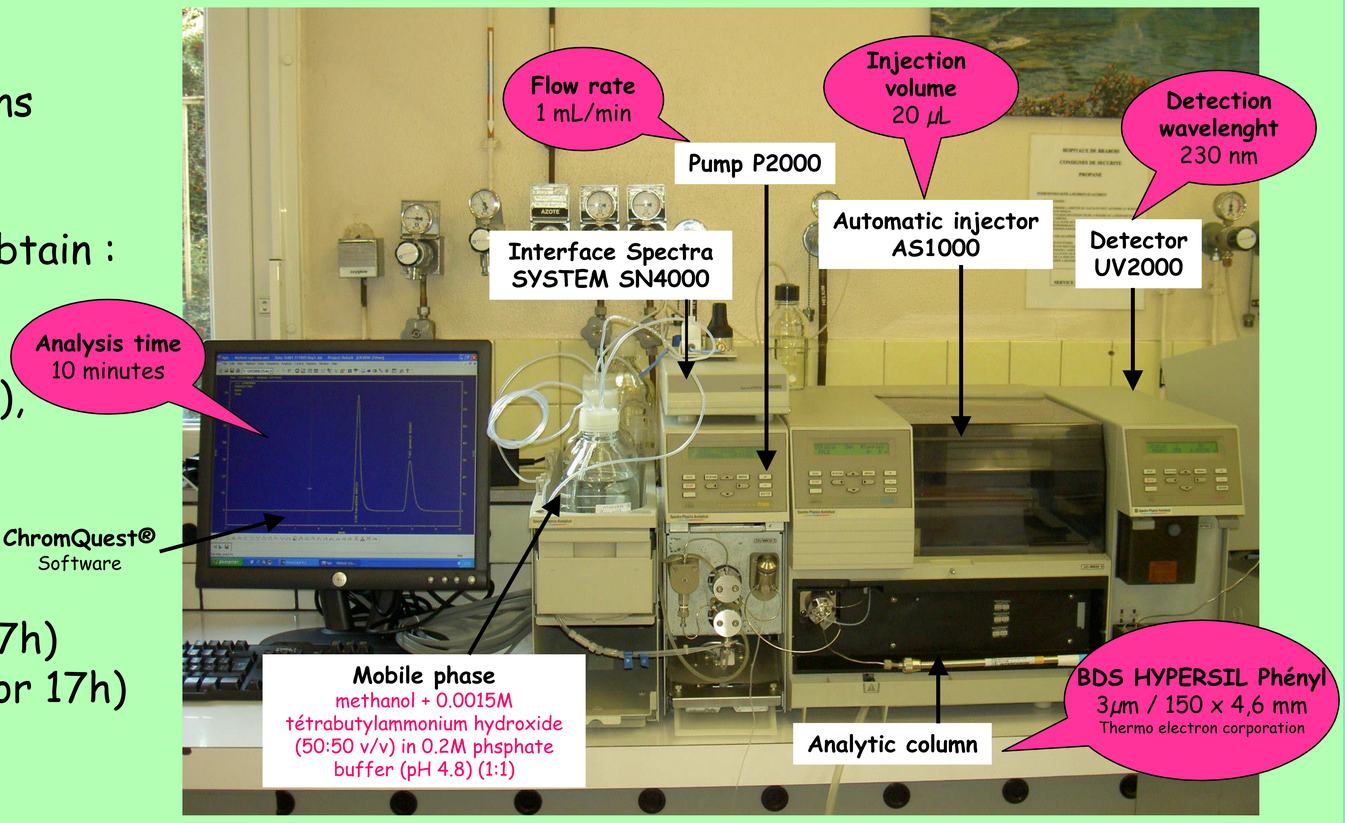
METHOD

Sample preparation and storage :

- Under a laminar airflow hood using aseptic conditions
- Container : 60 mL polypropylene syringe
- Solvent : 0.9% sodium chloride
- Sample diluted with sterile water for injection to obtain :
  - ketamine = 25 µg/mL
  - remifentanil = 2.5 µg/mL
- Storage conditions : at room temperature (22-24°C), under ambient light and protected from light

Analytical procedure

- Accelerated decomposition study :
  - ketamine 10 mg/mL + HCl 0.5N + heat (80°C for 17h)
  - remifentanil 1 mg/mL + NaOH 0.1N+ heat (80°C for 17h)
- Analysis at 0, 1, 2, 3, 4, 6, 8, 10, 12, 24 hours
  - Visual inspection
  - High-performance liquid chromatography method



HPLC chain (Spectra-Physics Analytical model)

RESULTS - DISCUSSION

No color change or precipitation was visually observed in any syringe.

Degradation peaks were observed after accelerated decomposition of ketamine by HCl 0.5N (**Figure 1**) and remifentanil by NaOH 0.1N (**Figure 2**).

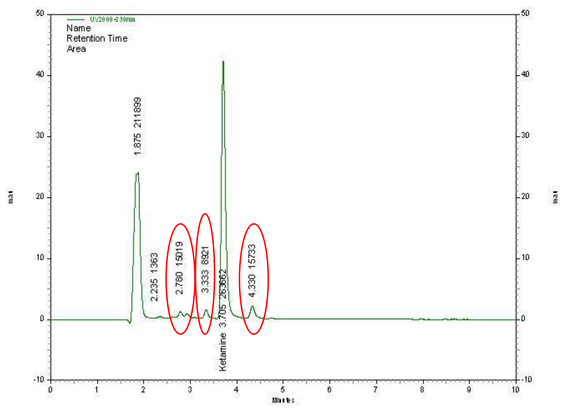


Figure 1

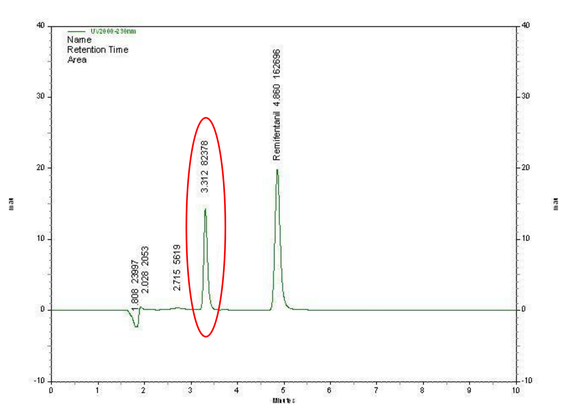
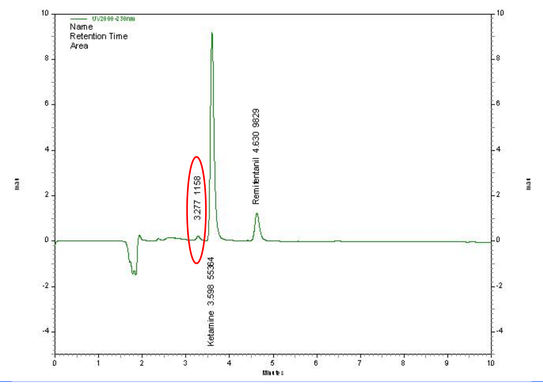


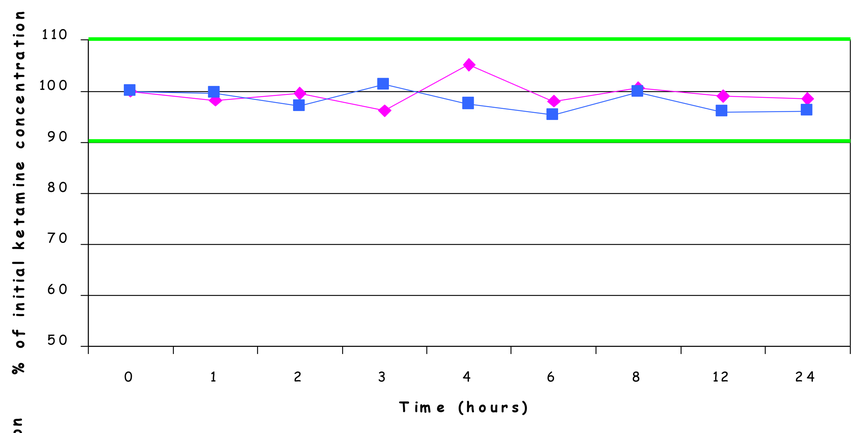
Figure 2

A specific degradation peak of remifentanil was observed at T_0 but did not increase during the study period (**Figure 3**).

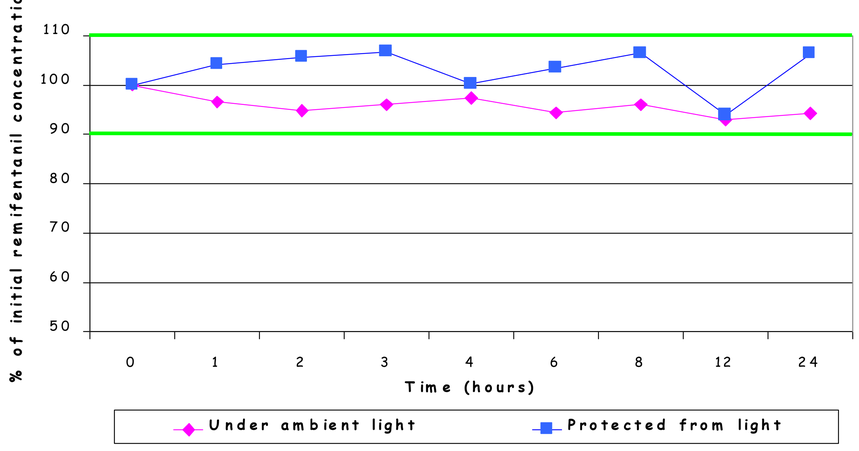


Evolution of ketamine (**Graph 1**) and remifentanil (**Graph 2**) concentration in mixture during 24 hours

Graph 1



Graph 2



The two syringes tested retained a concentration higher than 93% of initial ketamine and remifentanil concentration.

CONCLUSION

Ketamine 1 mg/mL and remifentanil 0.1 mg/mL in 0.9% sodium chloride, stored in polypropylene syringe, were stable for 24 hours, at room temperature, under ambient light or protected from light.

Conflict of interest : nothing to disclose

REFERENCES

LEE DKT, WANG DP, HARSONO R and coll. Compatibility of fentanyl citrate, ketamine hydrochloride and droperidol in 0.9% sodium chloride injection stored in polyvinyl chloride bags. *Am J Health-Syst Pharm* 2005 ; 62 : 1190-1192

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