

Stability of a parenteral admixture for epidural analgesia in labour



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INTRODUCTION

The addition of clonidine to epidural levobupivacaine and sufentanil for patient-controlled epidural analgesia in labour seems to improve analgesia, reduce supplementation rate and pruritus(1). Clonidine, levobupivacaine and sufentanil are mixed in the same infusion bag. However, there is no publication to prove the stability of the admixture during the infusion. The aim of our study was to validate the compatibility and stability of the three drugs in this admixture.

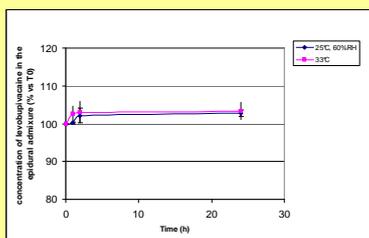
MATERIALS AND METHODS



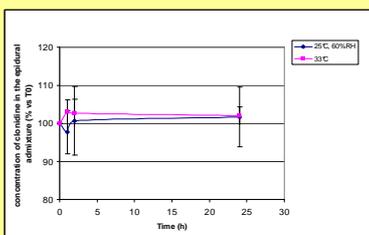
Storage during 24 hours at 25°C with 60% residual humidity and at 33°C, in light conditions

Monitoring of each sample at t0, t1h, t2h and t24h
- Visual inspection, pH and osmolality assessment
- **Chromatographic analysis** (stability-indicating method)
Column Phenyl, 4.6 x150mm, 5µm
Mobile phase :20% ACN/ 80%KH₂PO₄ for clonidine and levobupivacaine and 30% ACN/70% KH₂PO₄ for sufentanil
Flow rate: 1.5mL/min. Detection at 210nm.
The analysis of sufentanil needs a preliminary phase of concentration on a C18 column.

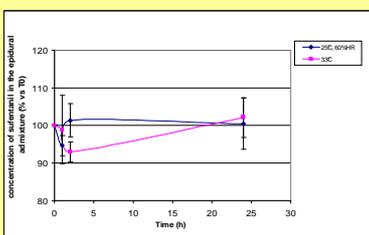
RESULTS



LEVOBUPIVACAINE: remained stable throughout the 24 hours of analysis period as well at 25°C as at 33°C



CLONIDINE: remained stable throughout the 24 hours of analysis period as well at 25°C as at 33°C

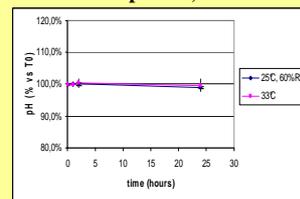


SUFENTANIL: remained stable throughout the 24 hours of analysis period as well at 25°C as at 33°C

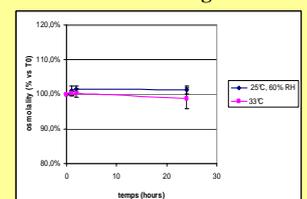
Solutions were clear and colourless without formation of particles

pH and osmolality of the admixtures remained unchanged throughout the study and were compatible with parenteral administration

Mean value of pH : 4,3



Mean value of osmolality: 305 mOsm/kg



No degradation product was detected by chromatographic analysis during the experiment

DISCUSSION, CONCLUSION

Based on the present results, admixture of levobupivacaine, clonidine and sufentanil remains stable under clinical conditions and can be used to give efficient and safer pretreatment in epidural patient-controlled analgesia



References

(1) Wallet F., Clement H.J., Bouret C. et al. Effects of continuous low-dose clonidine epidural regimen on pain, satisfaction and adverse events during labour: a randomized, double-blind, placebo controlled trial. Eur. J. Anaesthesiol., 2010, 27(5): 441-7