

Introduction

Agitation can be treated with neuroleptics such as haloperidol¹; **the current routes of administration** are orally or intramuscular injection which may be contraindicated or difficult to access for the elderly patient, in particular with dementia. The nasal route is an easily accessible and non-invasive route of administration.

Goal : formulation, control and evaluation of the **physicochemical stability** of a nasal solution of haloperidol.

Matériels et méthodes

- **Formulation**: haloperidol lactate, sodium acetate buffer (pH), mannitol (osmolarity), and LM-pectin (gel in contact with Ca²⁺) concentration at 4.9 mg/mL of haloperidol ;
- **Control**: organoleptic characteristics, pH, osmolarity, haloperidol concentration measured by HPLC, sample homogeneity ;
- **Physicochemical stability** : study of organoleptic characteristics, pH, haloperidol concentration on D0, D7, D14, D21, D28, D42, D56, D84, and D112.

Résultats

Tableau 1: **Physicochemical controls** of the nasal solution at D0

Contrôle	Résultats
Organoleptic characteristics	Opalescent solution
pH	Between 4.3 and 4.6
Osmolarity	Between 270 and 330 mOsm/L
Sample homogeneity	2.75% and 2.91% intragroup and intergroup CV

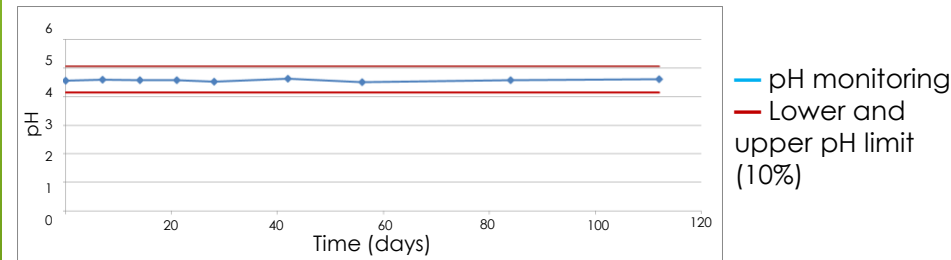


Figure 1: Evolution of the pH over time

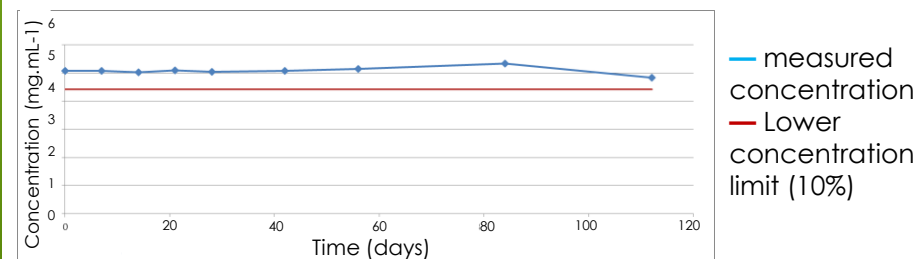


Figure 2: Evolution of haloperidol concentration over time

Conclusion

Nasal solution of haloperidol **compliant** (European Pharmacopoeia²) and physico-chemically **stable for 4 months**;

Prospects :

- **Microbiological stability test** over 6 months to be carried out;
- **In-vitro toxicity test** on the nasal membrane by cell culture;
- **In-vitro diffusion test of haloperidol** in Franz cells;
- **In vivo pharmacokinetic test**: CSF and blood sampling in rats.

Références :

1. Portail HAS Professionnels [Internet]. Haute Autorité de Santé. [cité 14 août 2021]. Disponible sur : <https://www.vidal.fr/medicaments/haldol-5-mg-ml-sol-inj-7923.html>
2. Pharmacopée Européenne, édition 9.5, 01/2008:0676 préparations nasales, pp. 940-942