

# Stability of frozen ceftazidime in polypropylene syringes for intravitreal injection

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## INTRODUCTION

Ceftazidime is an antibiotic used to treat endophthalmitis. The pharmacy needs to have Ceftazidime syringes immediately available to treat emergencies. Currently, we prepare ceftazidime syringes on a weekly basis and keep them in the refrigerator. This organization causes an important waste of syringes.

## Objectives

To study the stability of a 20 mg/mL Ceftazidime solution in polypropylene syringes, stored at 2-8°C or -20°C for 90 days.

## METHOD

Two series of three batches, each one containing 25 syringes, have been prepared from 2 g of ceftazidime mixed with 100 mL of NaCl 0,9% to obtain a 20 mg/mL solution.

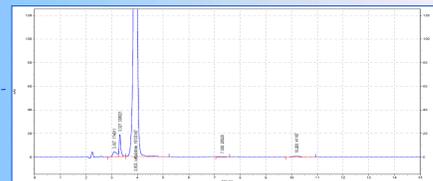
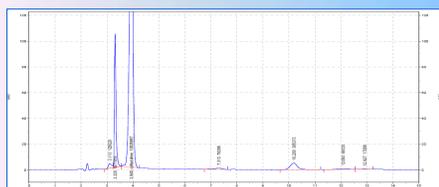
The first batch has been stored in the refrigerator while the other one has been kept in the freezer.

Stability criteria were a loss of the active substance of less than 5% and an apparition of a degradation product under a threshold of 2%. Analysis have been carried out by visual examination, pH measurement and a stability-indicating HPLC method. The syringes were analysed at D0, D7, D14, D21, D28, D42, D61, D90.

Storage at 2-8°C

## RESULTS

Storage at -20°C



### Chromatograms at D90

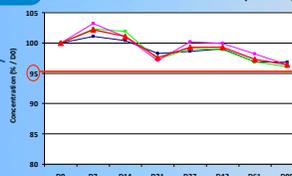
### Percentage of Ceftazidime against the initial concentration as a function of time

Ceftazidime percentage compared to the initial concentration as a function of time (at 4°C).



The average ceftazidime concentration remained above 95% of the initial concentration until D14

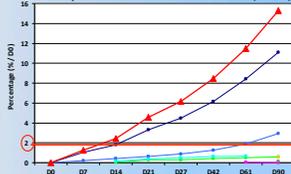
Ceftazidime percentage compared to the initial concentration as a function of time (at -20°C)



The average ceftazidime concentration remain ed above 95% of the initial concentration until D90

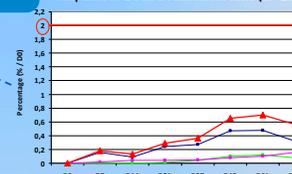
### Percentage of degradation products obtained compared to the surface of all the peaks.

Degradation products of Ceftazidime percentage compared to D0 as a function of time (at 4°C)



7 degradation products appeared and the percentage of degradation products detected is higher than 2% at D14.

Degradation products of Ceftazidime percentage compared to D0 as a function of time (at -20°C)



Three degradation products appeared and the total percentage of degradation products remains below 2% until D90.

## DISCUSSION - CONCLUSION

The 20 mg/mL ceftazidime solution in polypropylene syringes stored was stable for 7 days between 2 and 8°C and for 90 days at -20°C.

## APPLICATIONS

A batch production can be carried out every three months and stored in the freezer instead of every week when stored in the refrigerator. The solutions may be thawed at room temperature within a few minutes allowing a rapid availability in case of emergency.

<sup>1</sup> Réf : H-J Müller et Al.  
Stability of cefazolin, cefotiam, cefuroxime, cefotaxime and ceftazidime in normal saline solutions, stored in a new i.v. container made of Biofine.

<sup>2</sup> Réf : M.E. ABDEL-HAMID.  
FSQ spectrophotometric and HPLC analysis of some cephalosporins in the presence of their alkali-induced degradation products, // *Farmaco*, 1998; no. 53; p.132-138.



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