Method Development for the Quantification of Erythromycin in 250 mg Capsules

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INTRODUCTION

- Erythromycin : macrolide antibiotic used off-label for its **gastric emptying acceleration properties**.
- Discontinuation of the marketed product ERY® erythromycin 250 mg oral granules → **no more oral form of erythromycin available on the market**.
- Development of a new oral formulation of erythromycin

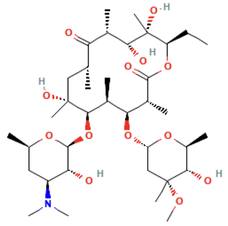
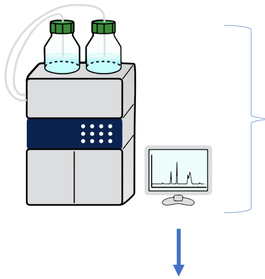


Figure 1: Chemical structure of erythromycin

Develop and validate an HPLC assay method for erythromycin 250 mg capsules

METHODS

VALIDATION OF THE ANALYTICAL METHOD

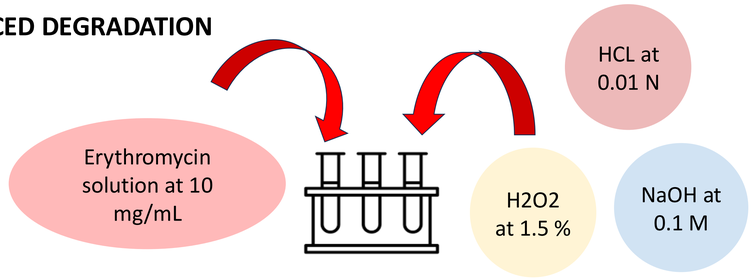


Chromeleon ® software

Mobile phase Acetonitrile/Buffer* (40/60) *Phosphate buffer 20 mM at pH = 8
Stationary phase Column: Polaris® C18 250x4.6 mm (5 µm)
Flow rate 1.5 ml/min
Detection wavelenght ƛ = 200nm
Target concentration 10mg/mL

Table 1 : Method parameters

FORCED DEGRADATION



RÉSULTATS

Pure erythromycin capsules (250 mg API) in size 0, to be swallowed or dispersed in a liquid

VALIDATION OF THE ANALYTICAL METHOD

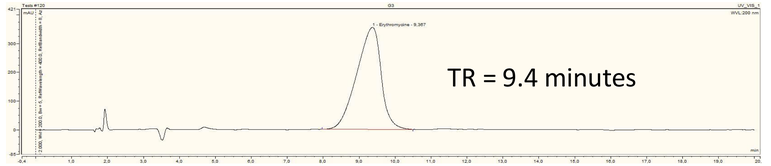


Figure 1 : Reference peak at 200 nm

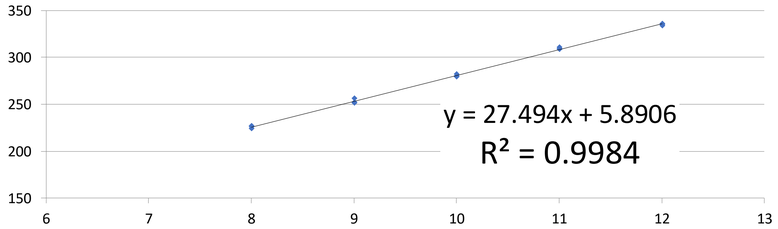


Figure 2 : Linearity

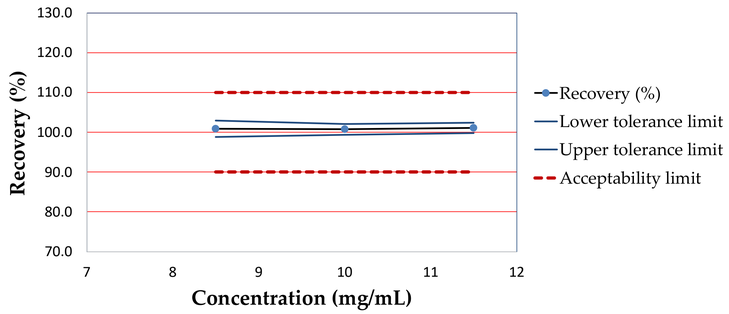


Figure 3 : Accuracy profile

	QC1	QC2	QC3
Accuracy (%) (n=3)	99.14 [98.22 ; 101.06]	100.20 [99.28 ; 101.12]	100.54 [99.62 ; 101.46]
Intermediate precision (CV%, n=9)	100.86	100.74	100.09
Repeatability (CV%, n=10)	1.16%		
Quantification limit	1.127 mg/mL		
Detection limit	0.372 mg/mL		

Table 2 : Validation parameters

FORCED DEGRADATION

No degradation products were detected at the retention time of erythromycin.

% of degradation	HCL 0,01M	NaOH 0,1M	H2O2 1,5%	Degradation products RT
10 min	26.7	34.9	100	2.5 et 3.5 minutes
20 min	23.3	34.3	100	
30 min	40.7	36.5	100	

Table 3 : Percentage of degradation depending on the stress agent

CONCLUSION

The method is validated per ICH Q2 (R1) guidelines → Forced degradation under milder oxidative conditions to be conducted → Stability study to be carried out