

## CONTEXT



Clinical trial requiring colchicine capsules at 0,5 mg

**OBJECTIVE** : To develop and validate a stability-indicating assay method for colchicine using HPLC coupled with a diode-array ultraviolet detector and a mass spectrometer to study the stability of these capsules.

## MATERIALS & METHODS

✓ Analytical validation (linearity, precision, accuracy and specificity) → according to the current ICH, for the following conditions :

Column	Phenomenex Kinetex 2,6 μM PS C18 100 x 3 mm
Mobile phase	A : ammonium formate buffer 5 mM, pH 3,5 (60%) B : acetonitrile (40%)
Flow rate	0,25 ml/min
Temperature	40°C
Detection	UV 2D : 254 nm and 350 nm UV 3D : 210 – 400 nm Mass spectrometry
Injection volume	20 μL
Analysis time	3 x retention time = 8 min
Pressure	1410 psi

Realization of **forced degradation (FD) tests**<sup>1</sup> to reveal possible degradation products :

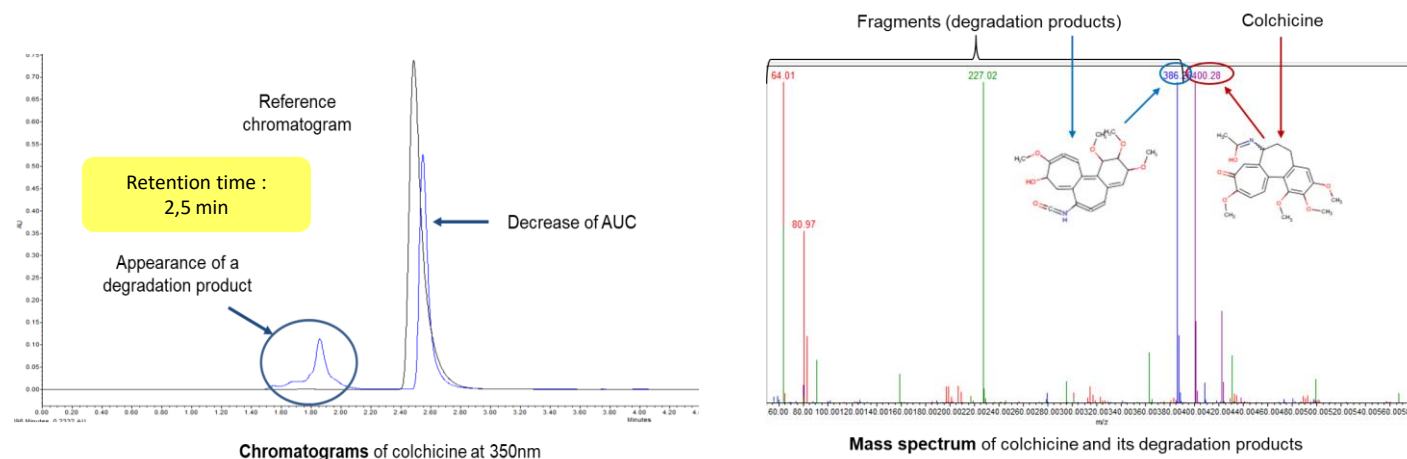
	Alkaline treatment	1 M NaOH, 1h +/- 80°C
	Acid treatment	1 M HCl, 1h +/- 80°C
	Thermal treatment	80°C, 1h
	Oxydative treatment	H <sub>2</sub> O <sub>2</sub> at 30%
	Photolysis	UV

## RESULTS

**Analytical validation** : linearity (concentrations between 15 and 35 μg/ml ( $r^2 > 0,99$ )), intra- and inter-day precision (CV < 5%) & accuracy (CV < 5%) → **OK**

**Specificity** : no interference observed between colchicine and the excipients tested (saccharose, magnesium stearate, polyvidone, erythrosine aluminium lacquer (E127), lactose).

Only the FD tests under **alkaline conditions** show **degradation products** :



An analysis of the data obtained associated with the study of the literature data allowed to identify some of the degradation products .

## CONCLUSION

The analytical assay method is validated and the FD tests have demonstrated the stability-indicating characteristics → possible realisation of the stability study of colchicine capsules at 0,5 mg.

<sup>1</sup>Coord. V. Sautou. 1<sup>st</sup> ed. SFPC/GERPAC, 2013. Methodological guidelines for stability studies of hospital pharmaceutical preparations.