

API Analysis of Ibuprofen

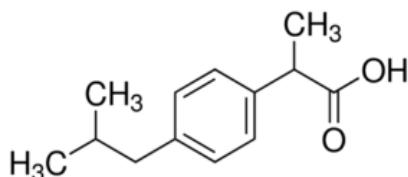
According to Ph.Eur 8.0

Summary

Ibuprofen is used in pharmaceutical products, often in antipyretic tablets. According to EP, Ibuprofen is identified by using fixed wavelength to verify the absorbance at 258 nm, 264 nm and 272 nm on UV/VIS spectroscopy. Its spectrum shows shoulder at 258 nm and 2 absorption maxima at 264 and 272 nm. The ratio of absorbance measured at the maxima to that measured at the shoulder, are required to result within the acceptance criteria as mentioned in EP version 8.0.

Sample and Reagent

- Ibuprofen reference standard
Sigma-Aldrich, Pcode: 1001547147
- Sodium hydroxide (0.1N)



Instruments and Accessories

- UV7 Spectrophotometer (ME-30254726)
- XP 205 Analytical balance (ME-11106027)
- Various volumetric flask
- Quartz cuvette with path length 1 cm

Sample preparation

Preparation of reagents

0.1N Sodium hydroxide (NaOH):

An equivalent amount of 4.0 g NaOH was weighed and transferred into 250 mL beaker. 200 mL of deionized water was added and sonicate to dissolve. Then the solution is transferred into 1000 mL volumetric flask and filled it up to the volumetric mark with deionized water.



Procedure

An equivalent amount of 50 mg of Ibuprofen reference standard is weighed in 100 mL volumetric flask. The reference sample is dissolved and filled up to the volumetric mark with 0.1 N NaOH. A cuvette of 1 cm with the preparation is filled. Blank measurement is performed using 0.1 N NaOH.

Measurement

Method parameters

Methods:	Fixed wavelength
Automation:	None
Path length:	1.0 cm
Wavelengths:	258, 264 and 272 nm
Dilution factor:	1
Calculation R1:	Ratio of A(264)/A(258)
Formula	A2/A1
Lower limit:	1.20
Upper limit:	1.30
Calculation R2:	Ratio of A(272)/A(258)
Formula:	A3/A1
Lower limit:	1.00
Upper limit:	1.10

Results

The mean values of the ten measurements are reported in the following table:

Ratio of Absorbance	Mean	Acceptance Criterion	Std Dev	Srel
A ₂₆₄ /A ₂₅₈	1.24	1.20 - 1.30	0.003	0.26%
A ₂₇₂ /A ₂₅₈	1.02	1.00 - 1.10	0.000	0.00%

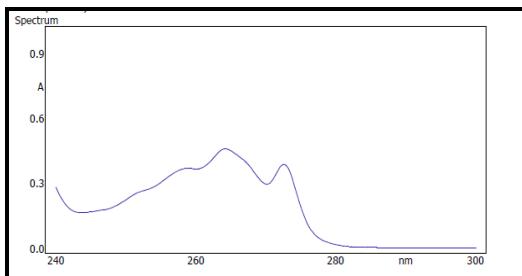


Fig1: Graphical representation shows a shoulder at 258nm and 2 absorption maxima at 264 and 272nm

Conclusion

Ibuprofen API Identification test can be performed with UV/VIS spectroscopy using fixed wavelength. Results obtained can be calculated automatically. Measurement results are found to be repeatable having Srel of 0.26 % for ratio of A264/A258; 0.00 % for ratio of A272/A258 and comply with specified acceptance criteria as per EP monograph.

References

- Ph.Eur 5.0 01/2005:0721 monograph of Ibuprofen

Further information

www.mt.com/uv-vis