A new and rapid UV-Visible spectrophotometric method for benidipine hydrochloride determination: Development and validation

Khater Ahmed Al-Japairai[1], Syed Mahmood[2], Nadiya Abdul-Halim[1*] & Samah Hamed Almurisi[3]*

[1] Department of Pharmaceutical Engineering, Faculty of Chemical and Process Engineering Technology, Universiti Malaysia Pahang, 26300 Gambang, Malaysia

[2] Department of Pharmaceutical Technology, Faculty of Pharmacy, Universiti Malaya, 50603 Kuala Lumpur, Malaysia

[3] Department of Pharmaceutical Technology, Kulliyyah of Pharmacy, International Islamic University Malaysia (IIUM), Kuantan 25200, Malaysia

e-mail: syedmahmood@um.edu.my, nadiya@ump.edu.my

ABSTRACT

A simple, sensitive and specific ultraviolet spectrophotometric method has been established for the determination of benidipine hydrochloride. The wavelength of maximum absorbance (λ_{max}) for benidipine was found to be 237 nm. Linearity of this method was observed in a range of 2.0 – 16.0 µg/mL. The method showed high sensitivity with good reproducibility of results. The limit of detection and the limit of quantification were 0.34 and 1.02 µg/mL, respectively. The calibration curve was constructed by plotting a graph of the absorbance versus concentration. The coefficient of correlation was higher than 0.99. The regression equation of this curve is $y = 0.0544x - 0.0526$. The percentage of drug recovery was found in the acceptable range (99.72 – 101.66%), and the coefficient of variation for the precision of this method was found to be less than 2.0. The proposed method can be suitable for the analysis of benidipine in tablet formulations for quality control purposes.

KEYWORDS

Benidipine; Tablet dosage form; UV spectroscopy; Validation

REFERENCES

1. K. A. S. AL-Japairai and S. Mahmood, in: *Materials Science Forum*, No. 1025 (2021), pp. 204 – 208.

2. K. Jagadeesh and N. Annapurna, *Pharm. Sci.*, **26**(1), 75 – 81 (2020).

3. M. M. Gupta, A. Khoorban, A. Ali, et al., *Cureus*, **12**(11), (2020).

4. E. B. Atici and B. Karlýða, *J. Pharm. Anal.*, **5**(4), 256 – 268 (2015).

5. M. Sravani, *Int. J. Pharm. Chem. Res.*, **3**(4), 775 – 806 (2017).