

Simultaneous Estimation of Artemether and Lumefantrine in Tablet Formulation by UV-Visible Spectroscopy using Simultaneous Equation Method

Prof. Utkarsh V. Nagvekar, Shivshankar K. Rapatwar, Suraj M. Jadhavar, Kuldip S. Bhurewad
Ashok K. Garad, Awez Z. Naikwadi, Sanobar M. Sanjapure
Sarojini College of Pharmacy, Kolhapur, India

Abstract: *In the present work, a simple, accurate and precise method has been developed and validated for the simultaneous estimation of antimalarial agents, Artemether & Lumefantrine and in their combined dosage form i.e. tablets by UV Spectrophotometric Method. It employs estimation of drugs by Simultaneous Equation Method (SEM) using 250 nm and 305 nm in Chloroform as λ_{max} values of Artemether and Lumefantrine respectively. Both drugs obey Beer-Lamberts law in the concentration range of 4.5 $\mu\text{g/ml}$ to 82.5 $\mu\text{g/ml}$. Validation of the proposed methods was carried out for its precision, linearity and limit of detection according to specifications. The recovery studies ascertained accuracy and reproducibility. The method was applied successfully for the estimation of Artemether and Lumefantrine in tablet dosage form without the interference of common excipients*

Keywords: Artemether, Lumefantrine, Simultaneous Estimation, UV-spectroscopy

BIBLIOGRAPHY

- [1]. da Costa César, Isabela, Fernando Henrique Andrade Nogueira, and Gérson Antônio Pianetti. "Simultaneous determination of Artemether and lumefantrine in fixed dose combination tablets by HPLC with UV detection." *Journal of Pharmaceutical and biomedical analysis* 48.3 (2008): 951-954.
- [2]. Shah, Smit R., et al. "Development and Validation of Analytical Method for Simultaneous Estimation of Artemether and Lumefantrine in Bulk and Marketed Fixed Dose Combination." *Pharma Science Monitor* 3.3 (2013).
- [3]. Panchale, Wrushali A., et al. "Simultaneous estimation of salbutamol sulphate and ambroxolHCl from their combined dosage form by UV-Vis spectroscopy using simultaneous equation method." *GSC Biological and Pharmaceutical Sciences* 13.3 (2020): 127-134.
- [4]. Sunil, J., M. SanjithNath, and U. Samba Moorthy. "HPLC method development and validation for simultaneous estimation of artemether and lumefantrine in pharmaceutical dosage forms." *Int J Pharm PharmSci* 2.4 (2010): 93-96.
- [5]. Parashar, Deepa, et al. "Simultaneous estimation of artemether and lumefantrine in pharmaceutical dosage forms using derivative spectrophotometry." *Asian journal of research in chemistry* 6.3 (2013): 226-231.
- [6]. Gondalia, Riddhi, RajashreeMashru, and PankajSavaliya. "Development and validation of spectrophotometric methods for simultaneous estimation of ibuprofen and paracetamol in soft gelatin capsule by simultaneous equation method." *International Journal of ChemTech Research* 2.4 (2010): 1881-1885.
- [7]. Arun, R., and A. Anton Smith. "Simultaneous HPLC-UV method for the estimation of artemether and lumefantrine in tablet dosage form." *Int J Pharm Biomed Res* 2.3 (2011): 201-205.
- [8]. Vinodh, Mannur, et al. "Analytical method development and validation for simultaneous estimation of Artemether and lumefantrine: in pure and pharmaceutical dosage form using RP-HPLC method." *By Malaysian Journal of Analytical Sciences* 17.3 (2013): 348-358.

- [9]. Christian, Jene, et al. "Optimizing derivatization conditions using an experimental design and simultaneous estimation of artemether and lumefantrine by ratio first order derivative spectrophotometric method." Journal of Taibah university for Science 11.5 (2017): 729-740.