Abstract

This study introduces an advanced analytical method employing RP-HPLC and UV-Vis spectroscopy for the accurate assessment of Linagliptin and Metformin in tablets. It directly addresses the pressing need for robust pharmaceutical quality control methods. Our primary objectives encompass the development and validation of a precise analytical approach, an exploration of specificity and sensitivity, and the highlighting of the complementary value of UV-Vis alongside RP-HPLC. Extensive literature review underlines the paramount importance of this research in meeting stringent regulatory requirements. Employing meticulous sample preparation and analysis techniques, utilizing synthetic mixtures, we harnessed the capabilities of the Agilent 1260 Infinity series and Schimadzu UV spectrometer 1900 series. Validation results unequivocally confirm the method's accuracy, specificity, sensitivity, and robustness, while forced degradation studies provide solid evidence of method stability. In conclusion, this research presents a validated and highly precise analytical method, ideally suited for routine pharmaceutical analysis. It marries the strengths of RP-HPLC and UV-Vis spectroscopy, offering a comprehensive approach to pharmaceutical quality assessment.