SUSTAINABLE CHROMATOGRAPHIC METHODS FOR ESZOPICLONE: METHOD WHITENESS EVALUATION APPROACH

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ABSTRACT

Eszopiclone is employed in the treatment of insomnia. Various analytical techniques, including chromatography and ultraviolet-visible spectroscopy, have been reported in the literature for the determination of eszopiclone. A review of existing literature indicates variability in the reported degradation percentage of eszopiclone. We aimed to develop validated, simple stability-indicating high-performance thin-layer chromatography and high-performance liquid chromatography methods to evaluate eszopiclone. Stability studies were conducted in accordance with Q1B and ICH Q1A(R2) guidelines, incorporating stress conditions such as hydrolytic conditions with pH variation, oxidative, photolytic and thermal degradation. The HPTLC method employed a CAMAG system with silica plates, utilizing a mobile phase of methanol:chloroform (0.5:9.5 V/V) and detection at 221 nm. For HPLC, a mobile phase consisting of 0.1M phosphate buffer (pH 2.5): acetonitrile (75:25 V/V) was utilized. The developed methods are sensitive, selective and accurate for the determination of eszopiclone.