Comparative Study of Multivariate and Univariate Determination of Zolmitriptan in the Presence of itsDegradation products

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Abstract

This work describes comparative study of multivariate chemometric and univariate spectrophotometric determination of zolmitriptan (ZLM) in the presence of its alkaline and oxidative degradation
products. Both methods show high sensitivity and the same linearity range (1-6 g/mL) while the chemometric
method has the advantage of higher accuracy, higher specificity and better regression parameters. The study
describes complete stability study on zolmitriptan and structure elucidation of the formed degradation products.
The spectrophotometric method based on successive spectrophotometric resolution pattern namely; successive
ratio subtraction (SRS) method using both degradation products as divisors successively followed by direct
spectrophometric measurement of zolmitriptan at 222 nm while the chemometric method used PLS and PCR
models. The proposed methods were successfully applied for the determination of zolmitriptan in pure powder
as well as in its pharmaceutical formulation. Statistical comparison showed no significant difference between
the developed methods and the reference method.

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