Development and Validation of Stability Indicating RP-HPLC Method for Estimation of Related substances of Cevimeline Hydrochloride in Capsule Dosage Form

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ABSTRACT

A specific, accurate, precise, sensitive and stability indicating RP-HPLC method was developed and validated for estimation of related substances of Cevimeline Hydrochloride in Capsule dosage form. The RP-HPLC method showed adequate separation of Cevimeline Hydrochloride and Impurity-A from its degradation products. The separation was achieved on a Hypersil BDS C_{18} (250mm X 4.6 mm i.d., 5 µm particle size) with an isocratic mixture of 10 mM monobasic sodium phosphate monohydrate buffer pH 3.0 adjusted with ortho-phosphoric acid after addition of 1% TEA: Methanol in the ratio of 85:15 v/v. The flow rate was monitored at 0.8 ml/min, Injection volume 20 µl and wavelength of detection was kept at 210 nm. Proposed method was validated as per ICH guidelines for Specificity, LOQ, LOD, Linearity, Accuracy and Precision. The retention time for Cevimeline Hydrochloride

and Impurity-A was 11.944±0.5 min and 13.169±0.5 min, respectively. The limit of quantitation for Cevimeline Hydrochloride and Impurity-A were 2.5 µg/ml and 5.0 µg/ml, respectively and limit of detection were 0.8 µg/ml and 1.6 µg/ml, respectively. The linearity was observed over the range of LOQ to 150% with correlation coefficient 0.9980 and 0.9986 for Cevimeline Hydrochloride and Impurity-A, respectively. Force degradation study was carried out on combined dosage form as per ICH guidelines were in it was exposed to hydrolysis (acid and base hydrolysis), oxidative, photolytic and thermal stress conditions. There was no interference of any excipients and degradants in the determination, which demonstrate the specificity of method for estimation of related substances of Cevimeline Hydrochloride. Thus the developed and validated stability indicating method can be used successfully for marketed formulations.

Key words: Cevimeline Hydrochloride, Impurity-A, stability indicating RP-HPLC method, Force degradation