Eco-friendly RP-HPLC and HPTLC Methods for Simultaneous Determination of Tamsulosin Hydrochloride and Daflazacort in the Presence of 21-hydroxy deflazacort and Testing the In-Vitro Dissolution of the Combined dosage Form Via RP-HPLC Method

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Abstract

Two Eco-friendly methods based on chromatographic separation were developed for simultaneous assay of Tamsulosin HCl and Deflazacort in their binary mixture. Green mobile phase which consists of mixture of ethanol and dilute acetic acid was employed for both developed methods. The first method was reversed phase high performance liquid chromatography (RPHPLC) with a photodiode array (DAD) detection for quantification of both drugs at wavelengths of 225 and 245 nm over a linearity range of 0.20ï100 and 0.50ï200 εg mLī1 for Tamsulosin HCl and Deflazacort, respectively. The second method was high performance thin layer chromatography (HPTLC) for separation and detection of the drugs by densitometry at 225 nm in the range of 0.30ï4.0 and 0.70ï5.0 εg bandī1 of Tamsulosin HCl and Deflazacort, respectively. The proposed methods were validated to comply with ICH guidelines. Regarding the high liability of Deflazacort to be degraded to its active metabolite: 21-Hydroxy Deflazacort, the suggested methods were assessed for their applicability to determine the two drugs in the presence of 21-Hydroxy Deflazacort and evaluated based on chromatographic system suitability parameters. Application of the proposed methods was performed for determination of Tamsulosin HCl and Deflazacort in their combined tablet dosage form besides monitoring its in-vitro dissolution patterns by the RP-HPLC method. The greenness of the suggested methods was evaluated using the Analytical Eco-scale and compared with the other official or reported methods for determination of cited drugs.

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