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Influence of mobile phase modifier and flow-rate on retention time, peak area, HETP and tailing factor in analysis of Levocetirizine hydrochloride by HPLC

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Aim of the present study was to investigate the influence of mobile phase modifier and flow-rate in the chromatographic separation of anti-histaminic drug. Here, simplest full 3-level factorial design with 2-factors (32 design) was applied to obtain best chromatographic separation of anti-histaminic drug Levocetirizine hydrochloride. Two experimental variables selected were (i) % of acetonitrile in mobile phase ammonium acetate buffer (10 mM, pH 4.8) (mobile phase modifier) and (ii) flow rate of mobile phase. Studied chromatographic separation parameters were (i) retention time, (ii) peak area, (iii) HETP and (iv) tailing factor. These experimental variables were simultaneously varied in the region of +1, 1, and -1. Using Response Surface Methodology (RSM), quadratic mathematical models were obtained to predict the chromatographic responses upon varying the experimental variables. From RSM, best level for separation was found to be 1 and -1 for % of acetonitrile in mobile phase and flow rate, respectively. Fittingness of selected set of variables was checked by applying it to the assay of tablet formulation and by performing the validation of method as per ICH guidelines.

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